The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Christmas Greeting

NEXT week THE CHEMICAL AGE will go to press on Tuesday evening, and the issue—our special Annual Review number—may therefore not be seen by many readers until the Christmas season is over. It is for this reason that, a little in advance, we offer to all our readers, advertisers, and other friends at home and overseas our best wishes for Christmas and the coming New Year. The closing year, for all engaged in chemical industry, has not been free from anxieties, but the general position has been well maintained and in some respects has improved. Industrial chemistry is essentially the feeder of all other national industries, and its products are used scantily or liberally in proportion to the low or high standard of national industrial activity. For a considerable period now hopes of a coming boom have been held out, but have not yet materialised. Now, once more, statesmen and commercial leaders are declaring that a period of good trade is at last really setting in. If this should prove to be true, chemical industry must immediately react to the better trade conditions. Such a change would be eagerly welcomed.

Even as it is, chemical enterprise in this country has been very far from stationary. Notable advances have been made in various directions. All these matters will be covered as usual in our Annual Review number of next week. The special features of this issue will include a carefully prepared retrospect of the events of the year by "H. F. H.," articles by Dr. E. B. Maxted on developments in the nitrogen industry, Mr. P. Parrish on the British heavy chemical industry, Dr. E. F. Armstrong on dyestuffs progress and problems, Mr. W. J. U. Woolcock on general aspects of British chemical industry, Mr. W. G. Wilson on the chemical trade movements of the year, our Patents Correspondent on chemical inventions in 1925, and a study of chemical import and export figures by our Statistical Bureau. In addition, short reports will be published of the work of the principal chemical organisations. This issue is of special value to advertisers, directors and works managers, works and laboratory chemists, technologists, and all others interested as producers, distributors, or users in chemical enterprise, since it is the only serious attempt to provide a chemical history of the year, and is proportionately valued and preserved for reference purposes.

The offices of THE CHEMICAL AGE will be closed during the Christmas season from Thursday evening until Tuesday morning, December 29.

Catalysts and Coal Carbonisation

ALTHOUGH the carbonisation industries are well over a hundred years old, the series of Cantor Lectures which Dr. Lessing has now completed has served to bring home to us that as yet probably only the threshold of this really remarkable process has been explored. We have only to go back to the commencement of the present century and to compare the practice at that period with the orderly and efficient methods of to-day to appreciate what enormous strides have been made in so short a time. Yet consideration of the progressive increase registered in the yield of the various products from a unit weight of coal leads one to the opinion that improvement has resulted rather from the influence of the engineer than from any notable application of chemical discovery. The present century has, in fact, witnessed many triumphs in plant construction, but, *per se*, chemical *rationale* has remained much where it was. The reason for this state of affairs is not far to seek, for in years gone by the carbonisation industries were largely controlled by those who prided themselves on being engineers to the finger tips, and who merely tolerated their chemical staff as rather doubtful necessities, to be relegated to the background in all questions of authority. The war, however, provided the chemist with his opportunity, and although in these particular industries he is a product of recent years, he has completely estab-

lished his position as one of reference by both controlling heads and workmen.

That the position of the technical chemist must become even more firmly established in the realm of coal carbonisation is instanced by the opportunities for modifying the products of carbonisation which, according to Dr. Lessing, are undoubtedly possible through the agency of catalysis. As yet our knowledge of the utilisation and mechanism of catalysts in certain directions is practically non-existent. In fact, our knowledge of the chemical reactions which most inorganic compounds in coal undergo during carbonisation, or even of the precise form in which the elements are combined in coal itself, renders a study of their effect on its thermal decomposition extremely difficult. The research that Dr. Lessing has already conducted leaves no longer in doubt the fact that inorganic compounds added to coal have a decisive effect on the yield, distribution, and properties of the products, both in the primary decomposition of the coal and in the secondary changes of the first products. Results indicate, indeed, that by a modification of the character of the inorganic substance added, it is definitely possible to vary the normal relation between the yield of solid and volatile products, while there are indications that it may also be possible to modify the physical characteristics of the coke obtained. The incidence on the carbonisation industries of modifications by catalysis is in the light of present knowledge almost impossible to foresee.

One has, however, to bear in mind that with the vast quantities of coal submitted to distillation in this country there are three distinct commercial processes having three distinct objects in view. Thus, the gas undertakings are primarily concerned with the nature and extent of the volatile products, coke-ovens establishments require above all other things a high yield of hard coke, while of smokeless fuel processes is demanded a maximum of easily-ignitable and non-friable semi-coke. As yet, it is the ingenuity of the engineer which has mainly been called upon to devise means for reconciling these different requirements. Possibly, however, the chemist may yet rise to the occasion and point the way to a satisfaction of the demands of all parties by ringing the changes on his inorganic catalysts.

A New Dyestuffs Feature

"It thus comes about that a constant stream of dyestuffs . . . flows from the research into the dyehouse department, for investigation . . . in the light of the known needs of the consumer." So wrote the chief colourist of the British Dyestuffs Corporation, Mr. Ronald Horsfall, in an article in these columns about a year ago, when discussing the dyestuffs industry from the dyehouse point of view. In accordance with the idea of co-operation between the two branches of the industry, embodied in this quotation, numerous indications have reached us of the need for a medium devoted specifically to the interests of the manufacturer as well as the user of dyes, in which mutual problems can be discussed. In the new year, therefore, as announced elsewhere in this issue, THE CHEMICAL AGE will commence the publication of a dyestuffs monthly supplement, containing information additional to that already appearing from week to week, with the object of extending yet further its close connections with the dyestuffs trade. So many products are, however, associated with the making and using of dyestuffs that to isolate all the news relating to this branch of the chemical industry would be impossible, even if desirable. The patent literature, for instance, that contains the very latest information, and is actually more up-to-date than that appearing in contemporary journals, would defeat its object unless it were published immediately it became available. The weekly abstracts will, therefore, continue to include all specifications relating to dyestuffs, in accordance with our policy to publish essentially current news. The supplement, in fact, as its title implies, while not detracting from dyestuff matters already appearing in THE CHEMICAL AGE, will place yet additional information at the service of the trade.

The saying that there never was a dyestuff yet discovered which would not meet somebody's need, if that need were only known, is undoubtedly illustrative of the scope of the industry. The application of dyestuffs in the acceleration of rubber is one outstanding example of the ever-widening uses being found for these products, while the advent of artificial silk has necessitated a new technique in the art of dyeing. Notes on important technical developments will be a feature of the supplement, written by experts who have agreed to contribute regularly under this head. On the commercial side arrangements have been made with special correspondents for market reports from the principal dyestuffs areas, thus providing an invaluable survey of the state of business month by month. Articles on dyestuffs plant will be another popular feature with every member of the trade. The first supplement will be published in THE CHEMICAL AGE of January 9, 1926, and thereafter in the second issue of each month.

French Chemical Conditions

THE new report on the economic and industrial conditions in France, prepared by Mr. J. R. Cahill, commercial Counsellor to H.M. Embassy, Paris, and published by the Department of Overseas Trade (H.M. Stationery Office, pp. 301, 8s.), combines a great mass of information with a wide general outlook. The key to the spirit of the report may be found in the first sentence—"The foundations of the economic power of present-day France are distinctly stronger and broader than those of the France of 1914; and this is true in an especial manner of her industrial power."

Of the important part that chemistry plays in French conditions early evidence is forthcoming. Through her own chemists' researches, it is remarked, and by virtue of agreements with foreign manufacturers, French chemical industries can now manufacture about 600 synthetic dyestuffs, covered by nearly 1,000 registered patents, most of which were German secrets in 1914. It is recorded with satisfaction that she has invented the Claude and acquired the manufacturing rights of the Casale and Haber processes for nitrogen fixation.

As a result of fairly recent absorptions or combinations, two concerns dominate the heavy chemicals trade. One with 23 works in various parts of France, besides having active interests in other chemical undertakings and working in collaboration for certain purposes with coal mines, also dominates the French glass industry; the other by its absorption in 1923 of the concern producing about 80 per cent. of the French dyestuffs output, now controls that branch of the chemical industry as well as being only second to the former in the production of fertilisers, sulphates, etc., in about twenty separate works. The textile (other than silk) dyeing and bleaching industry is dominated by a single concern with about fifteen works in the appropriate areas of Alsace, Normandy, the Vosges, and Lyons, whilst silk dyeing is dominated by one or two other undertakings. The sequestrated potash mines are still worked mainly by the appointees of the State, pending legislative decision, only one mine being in private working, and the sale of the bulk of potash is in single hands. Other chemical industries, such as those of pharmaceutical products, of soap, oil seeds, and candle making, have likewise come under the control of a few firms.

The development of the French dyestuffs industry is indicated by the fact that whereas before the war France was almost entirely dependent for intermediates on foreign sources, the industry now produces 89 per cent. of the national requirements. Output has risen from 7,056 tons in 1920 to 16,000 tons in 1924, and while in 1920 the lower grade—or sulphur base—dyes represented a large proportion of the total production, the present output contains a large quantity of higher grade—triphenylmethane and alizarine—dyes. The industry now exports considerable quantities of triphenylmethane dyes. Further advance is reported in the output of the Alsatian ex-German potash mines—both the sequestrated mines now under State control and the private-owned Kali Ste. Thérèse mine. In the cement industry, although Portland cement still represents the bulk of French production, a relatively new rapid maturing cement (known as "ciment fondu") is becoming a serious competitor. To meet the demand of the British markets, works are now being erected in London.

Research for oil substitutes has been steadily prosecuted. The lines of investigation include the treatment by the Bergius hydrogenation process of bitumens, tars, and other liquid products which might supply petrol oil for Diesel motors and other engines. The question of obtaining synthetic petrol, starting from vegetable and animal oils, has also been studied, but serious difficulties from the commercial point of view have been met with as the result of the high price of vegetable oils required. Official experiments have also been made in the use of synthetic petrol produced by starting from water gas. It is thought that petrol might be obtained by this process from the extensive fields of lignite in southern France and also from peat, of which there are abundant supplies in the country. Although these investigations are of interest they have not yet reached a stage at which they can be considered to have solved the problem of replacing petroleum on a commercial basis.

Urea as a Fertiliser

FROM inquiries we have instituted recently, it would appear that opinions differ about the merits of urea as an ideal fertiliser. Some chemists and fertiliser experts affirm that it is the fertiliser of the future. Others have equally strong views in the contrary direction. They do not challenge the opinion, largely held, that the more nearly a fertiliser resembles in physical, chemical, and other properties a natural one, the better it should be. They see no reason to modify or disturb this theory. The ground for their refusal to accept urea as an ideal fertiliser is that it is too concentrated to permit of its uniform distribution on the land. They point out that with ammonium sulphate to-day it is no easy matter to ensure the distribution of 4 cwt. per acre. If this statement can be justified, as there is reason to believe it can, one can readily appreciate how much more difficult it would be to distribute with any degree of uniformity over 4,840 square yards (say) $2\frac{1}{2}$ cwt. of urea—the approximate equivalent of 4 cwt. of ammonium sulphate.

It will probably be suggested that the urea could be homogeneously incorporated with sand or similar inert matter, but this is an operation involving expense. If it had to be done at the works at which the urea was produced, all the advantages of concentration, so far as carriage is concerned, would be lost. On the other hand, if the incorporation of the inert material were left to the farmer, it is to be feared that the work would not be done satisfactorily. Indeed, it is doubtful whether the farmer would care to be troubled with such an operation at all. Uniform distribution is undoubtedly an important consideration in the application of a fertiliser to the land, and one that must ever demand careful attention.

Books Received

INTERMEDIATES FOR DYESTUFFS. By A. Davidson. London: Ernest Benn, Ltd. Pp. 256. 36s.

THE CHEMISTRY OF DRUGS. By Norman Evers. London: Ernest Benn, Ltd. Pp. 247. 32s. 6d.

REPORT ON THE CONDITIONS AND PROSPECTS OF BRITISH TRADE IN INDIA, 1924–5. By Thomas M. Ainscough. London: H. M. Stationery Office. Pp. 218. 5s. 6d.

The Calendar

1926		
Jan.		
5	Royal Institution: Juvenile Christmas Lectures—"Old Trades and New Knowledge" (IV) "The Trade of the Dyer." Sir William Bragg. 3 p.m.	21, Albemarle Street, London.
5	Hull Chemical and Engineering Society: "Fuel Economy in Steam Plants." Arthur Grounds. 7.45 p.m.	Grey Street, Park Street, Hull.
5	Institute of Metals (Birmingham): "The Influence of Work and Annealing on Brass." Dr. O. F. Hudson. 7 p.m.	Chamber of Commerce, New Street, Birmingham.
7	Institute of Metals (London): "The Fatigue of Metals." J. Gough and Dr. D. Hanson. 7.30 p.m.	85 - 88, Minories, Tower Hill, London.
7	Society of Chemical Industry (Bristol Section): "The Contact Process for Sulphuric Acid." Stanley Robson. 7.30 p.m.	Chemical Dept., University, Bristol.
8	Chemical Engineering Group: "The Manufacture of Hydrogen for Industrial Purposes." A. Edgar Knowles, and others.	London.

Recent Researches on Mordant Dyes

By Gilbert T. Morgan, D.Sc., F.R.S., F.I.C.

We are indebted to Professor Morgan for the following outline of the Lecture he delivered before the Worshipful Company of Dyers, at Dyers' Hall, London, on Monday.

Historical Introduction

COLOURING matters were classified under two headings in regard to their mode of application to textile fibres by Dr. Edward Bancroft from whose treatise on "Experimental Researches concerning the Philosophy of Permanent Colours," which was published in 1794, the following passage (pp. 77-78) is quoted:

"To me, however, colouring matters seem to fall naturally under two general classes; the first including those matters which, when put into a state of solution, may be permanently fixed, and made fully to exhibit their colours in or upon the dyed substance, without the interposition of any earthy or metallic basis; and the second, comprehending all those matters which are incapable of being fixed, and made to display their proper colours without the mediation of some such basis. The colours of the first class I shall denominate *substantive*; using the term in the same sense as it was employed by Bacon Lord Verulam, as denoting a thing solid by, or depending only upon, itself; and colours of the second class I shall call *adjective*, as implying that their lustre and permanency are acquired by adjection upon a suitable basis."

Many years later Professor Hummel referred to substantive dyes as "monogenetic" dyes because they invariably produced one shade of colour, whereas the adjective dyes were termed by him "polygenetic" dyes, since the colours they imparted to the fibre varied in tint and depended upon the nature of the mordant with which they were employed. Colour principles of the mordant, adjective or polygenetic class, have been known from time immemorial, and they were formerly obtained either from animal or vegetable sources. Probably the oldest known of the mordant dyes of antiquity was "Kermes," a colouring matter of animal origin produced by the vital activities of an insect, *Coccus ilicis*, which is parasitic on a small species of oak, *Quercus coccifera*. This shrub is also known as the "Grain tree" and it has occasionally been referred to as "Abraham's Oak."

Crest of the Dyers' Company

Three sprigs of this plant form the crest of the Worshipful Company of Dyers, the heraldic description being "On a wreath of the colours, three sprigs of the grain tree, erect vert, fructed gules," that is, a plant with green leaves and red berries. As the arms of the Dyers' Company were granted in the fifteenth century, probably between 1420–1450, it is clear that the Mexican cochineal (discovered in 1518) is not intended, and the grain tree is evidently the Kermes oak, the red berries being the bodies of the insect from which the red dye had long been obtained in the old world.

The ancients were also acquainted with the mordant dye derived from madder *rubia tinctorum*, a plant which was long cultivated for the use of the dyer. Modern research has shown that the essential colour principle of madder is alizarin, one of the ten isomeric dihydroxyanthraquinones. The synthesis of alizarin was accomplished in 1869, since when this mordant dye has been produced synthetically from the coal tar hydrocarbon, anthracene. The combination of mordant dye and mordant to form a lake (or sparingly soluble coloured compound) is akin to the production of a salt by the neutralisation of an acid by a base:—

Acidic mordant dye + Basic mordant = Lake.

Methods of Applying Mordant Dyes

There are four methods of bringing about this combination, and three of these processes are the result of modern developments in the art of dyeing.

(1) The oldest and classical method of pre-mordanting is first to impregnate the fabric with the mordant, the prepared fabric being then immersed in a bath containing the dye. Pliny had seen the Egyptians employing this process, and his observations are thus translated by Bancroft:

"The Egyptians began by painting or drawing on white cloths (doubtless linen or cotton) with certain drugs, which in themselves possessed no colour, but had the property of attracting or absorbing colouring matters. After which, these cloths were immersed in a heated dyeing liquor, and though they were colourless before, and though this dyeing liquor was of one uniform colour, yet when taken out of it soon after, they were found to be wonderfully tinged of different colours, according to the different natures of the several drugs which had been applied to their different parts; that these colours could not afterwards be discharged by washing." Similar processes are still used to-day in wool dyeing and calico printing.

(2) The second method of after mordanting is usefully employed in the case of certain substantive dyes which are rendered faster and sometimes modified considerably in shade when the dyed fabric is subsequently treated with a mordant. This modern development is employed in the case of many hydroxyazo-dyes and also of certain substantive dyes from anthraquinone.

(3) The third method of concurrent mordanting is exemplified by the so-called "metachrome" process in which chromic hydroxide is slowly developed during dyeing so that application of the dye and its conversion into a lake proceed practically simultaneously.

(4) The acidic mordant dye and basic mordant are combined to form a lake which for this process must be sufficiently soluble to be applied from a dye bath. The "Neolan" dyes are soluble lakes of this nature, which have been put on the market by the Society of Chemical Industry in Basle. The samples of dyes and dyed patterns illustrating the Neolan series were supplied by Dr. Schedler of the Clayton Aniline Co.

Differences Between Substantive and Adjective Dyes

Modern theories of chemical combination have led to a means of distinguishing between substantive and mordant dyes in regard to the chemical structures which are essential to their dyeing properties.

Metals such as cobalt or chromium manifest two modes of chemical combination. Chromium, for instance, forms the trichloride $CrCl_3$, which is quite insoluble in water but combines with liquid ammonia to form two compounds $[CrCl,5NH_3]Cl_2$ and $[Cr,6NH_3]Cl_3$ which dissolve in water. These two chromammines and the analogously constituted cobaltic salts $[CoCl,5NH_3]Cl_2$ and $[Co,6NH_3]Cl_3$ may be used as reagents in ascertaining the chemical nature of the two main classes of dyes.

The foregoing cobaltic reagents, together with such others as $[Co,5NH_3,H_2O]Cl_3$ and $[Co.OH,5NH_3](OH)_2$, have been employed in these tests by Morgan and Smith, whereas the two chromammines have been utilised independently by H. J. S. King. The latter investigator has found that the chromammine salts of substantive dyes decompose on warming to give their ammonium salts with elimination from the organic molecule of chromium hydroxide, whereas the chromammine salts of mordant dyes lose their ammonia and pass into chromic lakes.

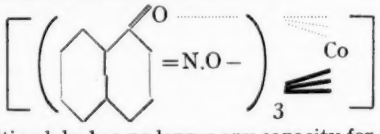
The cobaltammine tests have been applied systematically to several important groups of mordant dyes with the result that in every case examined the dye has been found to possess a characteristic group to the presence of which the lake-forming property of the dye must be attributed.

The details of these experiments have already been described (Morgan and Main Smith, *J. Soc. Dyers and Colourists*, 1925, 41, 233-241), but one example may be cited in illustrating the method of working. The sodium salt of 1-nitroso-β-naphthol or gambine Y and hexamminocobaltic chloride interact in cold aqueous solution to yield a dark green sparingly soluble hexamminocobaltic-1 : 2-naphthaquinone-1-oximate:

$$3\,O:C_{10}H_6:NONa + [Co,6\,NH_3]\,Cl_3 = 3\,NaCl + \{O:C_{10}H_6:NO-\}_3 \Leftarrow [Co,6\,NH_3]$$

But on gently warming at 40° this cobaltammine loses all its ammonia and passes quantitatively into the stable cobaltic

lake (1) from which the cobalt is no longer removable by such analytical reagents as alkalis or ammonia.

(I.) 

The resulting lake has no longer any capacity for combining with ammonia, and hence it may be deduced that the co-ordination number 6 which is characteristic of all the foregoing cobalt reagents has been made up by three molecular proportions of the nitrosonaphthol or quinoneoxime radical which behaves as a twofold associating group. These reactive groups which often give rise to co-ordination complexes of considerable stability are known as chelate groups, from *chela*, the great claw of the lobster or other arthropod. This experiment with gambine Y has been confirmed by H. J. S. King working with the two chromammines $[Cr,6NH_3]Cl_3$ and $[CrCl,5NH_3]Cl_2$. In each case the chromammine salt of the gambine passed readily on warming with complete loss of ammonia into the chromic lake of the dye. This chromic lake is identical with the colour produced by dyeing with gambine Y on chrome mordanted wool.

Other quinoneoxime dyes were examined systematically with the cobaltammine reagents (Morgan and Main Smith *loc. cit*), and it was shown that, when these contained acidic groups, complex lakes were obtained in which the ratio of cobalt atoms n to ammonia molecules m could be generally expressed by the equation $m=5$ $(n—1)$. This relationship indicates that in all these complex lakes there is always one cobalt atom which has lost its capacity for combining with ammonia. It is the cobalt atom implicated in the chelate complex.

The inquiry was extended to dyes of the alizarin series, most of which were found to be monochelate dyes, but certain members of the group, and notably alizarin blue, were found to give dichelate lakes where the relationship of the ammonia molecules m to cobalt atoms n was expressed by the equation $m=5\left\{n-\frac{(c+4)}{5}\right\}$ where c is the number of chelate groups.

This cobaltammine method of investigation was also applied to the azosalicylates including alizarin yellow 2G (khaki yellow) to metachrome brown, and to the di-*o*-hydroxyazo dyes. In the last instance the method enabled one to distinguish between true mordant dyes such as eriochrome red B and palatine chrome black 6B and oxidisable dyes which only yielded deeply coloured lakes after oxidation. To the latter category belong diamond black P.V. and the chromotrope dyes.

Certain monohydroxyazo dyes which do not themselves contain chelate groups are nevertheless altered very materially in shade by after chroming. Carmoisin WS is a case in point, and here the mordanting properties were found to be absent in the dye itself and only produced after oxidation.

Modern Developments

Since 1914 considerable development has taken place in the manufacture by British firms of various classes of mordant dyes. This expansion was illustrated by two sets of dyed patterns from the British Alizarine Co. Before the war this firm manufactured only alizarin blue and a few shades of alizarin red. Now many alizarin mordant dyes with a wide range of colours are being produced, and since these colours are derived from anthraquinone this substance has been used as a starting point for the manufacture of other dyewares such as substantive dyes and vat dyes whenever these can be produced from anthracene or anthraquinone. These modern researches on mordant dyes have brought about a home production of many colouring matters which were formerly the monopoly of continental firms. Only by incessant investigation coupled with a well considered policy of safeguarding can this position of independence be maintained.

At the conclusion of the lecture thanks were expressed to Mr. W. H. Dawson (British Alizarine Co.) and Dr. Schedler (Clayton Aniline Co.) for samples of dyes and dyed patterns, and to Messrs. Porter and Stockwell for their kind assistance in the preparation of lantern slides.

Chemical and Combustion Engineering

To the Editor of THE CHEMICAL AGE.

SIR,—I sincerely hope that the scheme for making Finsbury Technical College a centre for teaching chemical engineering will succeed, and I also suggest that the systematic teaching of combustion engineering be located there.

Chemical engineering and combustion engineering are very much akin, because combustion engineers and fuel technologists must necessarily have considerable knowledge of organic and inorganic chemistry.

Objection may be raised that the Finsbury building is unsuitable for boiler testing, etc., but no doubt arrangements could be made at a nearby power station to run occasional boiler trials.

If the above be carried out, Finsbury College might also become the headquarters of the Institute of Chemical Engineers, and also of a new Society of Fuel Technologists or Combustion Engineers, which latter is badly wanted, because of great advances now being made.

It is becoming the fashion to locate scientific and engineering societies in colleges, *e.g.*, the present address of the American Electro-Chemical Society is at Columbia University, New York City, and at one time it was at Lehigh University.

Another suggestion I make is that a scholarship for combustion engineering be founded to perpetuate the name of Bettington, a principal pioneer of pulverised fuel firing, who lost his life as an aviator in the war.—Yours, etc.,

E. KILBURN SCOTT,
38, Claremont Square, N.1. A.M.Inst.C.E., M.Inst.E.E.
December 10, 1925.

Trade Marks in Russia

To the Editor of THE CHEMICAL AGE.

SIR,—Our Leningrad correspondent informs us that, in accordance with an official communication received, trade marks of British firms can now be registered in the Union of the Soviet Socialistic Republic without producing a document stating the reciprocity or the proof of the "legal standing" of the applicants in U.S.S.R. If any of your readers are interested in this matter we shall be pleased to furnish them with further particulars relative thereto.—Yours, etc.,

KING'S PATENT AGENCY, LIMITED,
146A, Queen Victoria St., E.C.4. BENJ. T. KING, director.
December 9.

B.D.C. Reconstruction Scheme

Approved by Shareholders' Meeting

THE British Dyestuffs Corporation's reconstruction scheme, by which the capital of the company is reduced from £9,197,112 to £4,775,580 and the Government's holding of preference and preferred ordinary shares is purchased for £600,000, was finally confirmed at an extraordinary general meeting of the shareholders in Manchester on Monday.

Replying to Mr. Parker Smith, who questioned the legality of certain proposals, complained of the allocation of the excess profits duty refund to trading instead of to capital account, and criticised the writing down of stocks, Lord Ashfield, chairman, said that they had been most careful to keep within the articles of association and of every applicable precedent, and a majority of the shareholders having approved the scheme the Court, he thought, would sanction it. Mr. Smith had said that the shareholders so far had been fed on promises. That might be true, but he was not in a position to make any comment on any promises made by his predecessors. If they reviewed the names of past chairmen, each was an honourable man who would not make a statement which he did not firmly believe to be justified at the time. He had determined not to put himself in the position of prophesying, and he would make no promise that could not completely be fulfilled.

He had done no more than say he believed that this scheme of reconstruction would be advantageous to the undertaking. They knew it was necessary to put this scheme of reconstruction through and divorce themselves completely from any interference by the Government, and they only pledged themselves to do all in their power to bring success to the undertaking.

Third Ludwig Mond Lecture

Sir William Hardy on Adhesion and Chemical Composition

THE third Ludwig Mond lecture was delivered at the Manchester University on Friday, December 11, by Sir William Hardy, F.R.S., the former secretary of the Royal Society, upon the subjects of " Adhesion, Friction, and Chemical Composition."

Sir Henry A. Miers (Vice-Chancellor of Manchester University), who presided, said that when the Ludwig Mond lectures were founded it was decided there should be two each year, one devoted to science and the other to art, literature, or some other subject in consonance with the bent of the late Dr. Ludwig Mond's sympathies and remarkable personality. The University were particularly glad to extend a welcome to Sir William Hardy because there was no one who had greater qualifications to deliver a lecture founded in memory of the late Dr. Ludwig Mond from the scientific point of view.

Four Forms of Matter

Sir William Hardy said he wished to deal with the subject of his lecture from its most general aspect. There were three states of matter usually recognised—the solid, the fluid, and the gaseous—but there was also a fourth. When " matter " was spread in a thin film and placed between two other faces, it differed from the same " matter " in mass and also in physical properties. The reason was obvious. If one considered a molecule in the interior of a mass of fluid, that molecule, owing to heat motions, would be pulled equally in all directions by neighbouring molecules. This state of affairs seldom or never occurred in the case of thin films, the molecule being subject to the influence of surface forces, and orientated by surface forces with respect to the normal and the contingent planes of the film. The result was that in this fourth state of matter—in such films—there was a molecular architecture peculiar to the film, a kind of crystallisation which might be taken to be a compromise, or, if it was preferred, a conflict between the lattice pattern normal to the substance, the surface forces, and the heat motions. Therefore, the phenomena to be looked for in such extended films were the phenomena characteristic of the fourth state of matter, a whole orientated structure. It was to be presumed that in this kind of crystallisation the molecule retained its individuality more than it did perhaps in the true crystal pattern. The film under consideration divided into two different classes. One class, for example, was enclosed in two vapour faces which had such a small density with respect to the film itself that if nuclear action or chemical action be excluded one could practically neglect them. That kind of film was called a free form and had its own autonomous existence, an ordinary example being that of a soap film, the structure of which had been given up by a French physicist as an insoluble enigma. It was quite the wrong sort of film to start off with, one difficulty being that it had three or four components. It was matter in the colloidal condition, and, when a great deal more was known about the colloidal condition, and the number of variables which could be employed, perhaps the soap film could be understood.

It was possible to start with films with practically the same stability and in which there was perfectly definite structure. Such a film was composed of a plate of water with two molecular sheets of an acid on each side. Other films were those which were spread between a dense face and a vapour face, the kind of film which formed when oil was spread upon water. The characteristic of this class of films was their asymmetry, probably in the main due to the asymmetry of the surrounding material. A third class of films lay between two fluid faces, for example, and this class had been least studied of all, practically nothing being known of them.

Lubricants, Adhesives, and Abrasives Compared

Sir William Hardy stated that he more especially wished to deal with films enclosed between two solids. The first reaction upon one's mind was to regard such a film merely as a lubricant ; to think of its function only as that of lowering the resistance to slip. Its influence could, however, be quite different. For example, assume two solid faces which are close together but far enough from one another to be out of the range of their mutual attraction. One face could then be slipped past the other without any resistance. Next, fill the space with the best lubricating oil, and instead of having no resistance there would be a sensible resistance. It was, therefore, merely a question of degree between the lubricant and the adhesive. The next step was to pass from the lubricant to the abrasive. If the layer of lubricant between the two solid faces was a good one, and if the velocity of the relative motion was not too high, it would slide the one solid across the other without any wear of the solid faces. This could only mean that the plane of slip lay in the intervening film of lubricant.

Unexpected Properties of Water

But there were some substances, of which water was one, which shifted the plane of slip into the solid, thus passing from the lubricant to the adhesive. It was merely a question of where the plane of slip happened to be. In this connection water was a most remarkable substance. It was, in the first instance, a neutral substance ; that was to say, it did not alter the friction. This seemed incredible, but it was literally true. If there were quite clean surfaces of steel upon steel, glass upon glass, or glass upon steel they would " seize " at once, a condition which was not altered by three places of decimals by " flooding " water between them. If the surfaces were lubricated before the water was passed, then the presence of the water would destroy almost wholly or completely—completely in the case of alcohol—the lubricating quality of the long chain molecules. In other words, it destroyed the lubricating action of the pre-existing lubricant. Water was not only a lubricating substance but also an anti-lubricant or adhesive.

Sir William Hardy then demonstrated this point by an experiment with a saucer and a tea-cup, which, to unaided vision, appeared to be perfectly clean. Owing to imperceptible atmospheric contamination a film of lubricating substance was deposited upon both the saucer and the teacup, with the result that in a dry condition the tea-cup could be caused to slip about the saucer at will. If, however, the bottom of the tea-cup was slightly damped, so as to create a thin film of water, and then placed in the saucer, the latter could be tilted to an angle of about 70° before the tea-cup moved from its position, and, when it actually did so, it did not slip but appeared to tear itself away from the surface of the saucer with a kind of wrench. The word of Lord Rayleigh could be accepted for it that this was not merely an instance of capillary attraction or suction. There was literally " seizing " between the saucer and the rim of the tea-cup, and the " seized " points had to be broken. Sir William Hardy stated that this phenomenon had puzzled not only himself but also Lord Rayleigh and Lord Kelvin, and no reason could be given as yet as to why a neutral substance like water should act as an anti-lubricant.

Sir William then gave an account of some recent experiments with regard to enclosed films of a large number of chemical substances, including octyl alcohol, glycerol, *p*-cymene, coprylic acid, octane, etc.

With regard to ascertaining the breaking strain of films enclosed between two solid surfaces, the apparatus at present in use was fitted for very delicate work, so that the strains could not be tried which were necessary to obtain final results. New apparatus would have to be designed. It was, however, apparent, that there was a rupture of the surface of the film. The force required to tear ringed compounds was higher than with chained compounds.

Professor Dixon moved, and Professor Bragg seconded, a vote of thanks to Sir William Hardy for his lecture, which was carried by acclamation.

Russian Sulphuric Acid Production Progress

AT a recent meeting of the Chemical Industries Council the deficit in the production of sulphuric acid was considered. It was shown that the orders by consumers for this article in the first half of 1926 exceed 36,600 tons, while the production plan contemplates a supply in the first half-year of only 25,000 tons of sulphuric acid. The Council therefore found it necessary immediately to bring into action the sulphuric acid plants in the Deguninsk, Zhilevsk, and Schtchelkovsk factories of the Moscow Heavy Chemicals Trust, besides others under different control. A committee was appointed to work out a plan for developing the production of sulphuric acid and to take steps for supplying the new plant with pyrites.

Chemical Trade Returns for November

Imports and Exports Down on Last Year's Figures

IMPORTS of chemicals, dyes, drugs, and colours (excluding mercury) for November totalled £1,258,503, a decrease of £21,159 on last year's figures and an increase of £97,380 on the figures for October of this year. Exports are valued at £1,777,322, a decrease of £393,681 as compared with November, 1924, and a decrease also of £311,423 in October.

On the export side several important changes will be noticed. Reference was made recently to the serious losses in the Japanese market for sulphate of ammonia owing to the substance caking in transit. For November the figures show 1,923 tons exported as against 8,292 tons in October.

The aggregate exports of the sulphate for the month are down considerably as compared with last year. Carbolic acid figures are more than double 1924 results, but tar oil and creosote oil have dropped very considerably. Crude glycerine has fallen from 17,990 to 122 tons, and distilled glycerine is less than a third of last year's figures.

On the import list borax has risen from 2,625 cwt. to 8,381 cwt., and glycerines are up considerably, also mercury. There have been reduced imports of alizarine, and none of indigos, or intermediates. Potassium Nitrate figures are almost halved, and similarly other potassium compounds have fallen from 484,967 cwt. to 241,806 cwt.

Imports

	Quantities. Month ending November 30.		Value. Month ending November 30.	
	1924.	1925.	1924. £	1925. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic .....tons	701	662	30,984	29,439
Acid Tartaric.....cwt.	2,063	2,284	10,248	10,920
Bleaching Materials „	4,264	4,359	9,441	8,496
Borax..... „	2,625	8,381	3,094	9,928
Calcium Carbide... „	100,709	78,041	66,668	47,733
Coal Tar Products.value	—	—	4,061	17,308
Glycerine, Crude ..cwt.	46	237	120	425
Glycerine, Distilled „	36	204	161	754
Red Lead and Orange Lead..... „	2,544	1,509	4,744	3,176
Nickel Oxide..... „	2,965	3,001	15,233	16,470
Potassium Nitrate „	21,236	12,700	23,610	14,528
Other Potassium Compounds .... „	484,967	241,806	68,310	63,914
Sodium Nitrate ... „	122,482	95,140	80,364	57,822
Other Sodium Compounds ..... „	38,296	22,770	22,238	18,978
Tartar, Cream of... „	3,708	2,627	14,179	9,449
Zinc Oxide .....tons	683	824	22,343	29,626
All other Sorts ...value	—	—	259,228	287,312
DYES AND DYESTUFFS—				
Intermediate Coal Tar Products.....cwt.	68	—	808	—
Alizarine ..... „	5,740	239	23,298	5,834
Indigo, Synthetic.. „	—	—	—	—
Other Sorts ..... „	6,931	2,867	180,658	49,500
Cutch..... „	5,534	5,191	7,121	9,830
All other Dyeing Extracts ..... „	5,015	5,168	17,980	14,461
Indigo, Natural ... „	154	—	2,979	—
Extracts for Tanning „	97,213	100,966	93,100	92,399
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground ...cwt.	56,309	72,938	13,381	17,909
White Lead (dry).. „	17,811	14,654	36,538	31,546
All other Sorts .... „	64,430	76,032	91,229	113,620
Mercury .....lb.	40,080	77,127	5,791	12,685
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	1,285,453	1,271,188

Exports

	Quantities. Month ending November 30.		Value. Month ending November 30.	
	1924.	1925.	1924.	1925.
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	2,516	2,892	3,135	3,515
Acid Tartaric ..... „	972	1,141	5,600	6,195
AMMONIUM COMPOUNDS—				
Chloride (Muriate) .tons	287	242	10,285	7,440
Sulphate—				
To France ..... „	2,398	1,200	30,016	14,404
Spain and Canaries.... „	8,445	4,229	110,179	51,169
Italy..... „	279	300	3,728	3,625
Dutch East Indies,,	7,454	2,091	98,784	25,087
Japan..... „	2,947	1,923	38,308	23,536
British West India Islands .....tons	747	530	10,088	6,769
Other Countries „	3,918	4,656	50,582	55,948
Total ..... „	26,188	14,929	341,685	180,538
Bleaching Powder ...cwt.	26,195	26,568	14,271	12,687
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	—	—	—
Benzol and Toluol .galls.	1,053	1,196	108	149
Carbolic Acid .....cwt.	7,402	18,128	13,819	25,149
Naphtha .....galls.	2,681	6,544	228	633
Naphthalene .....cwt.	1,505	854	1,139	839
Tar Oil, Creosote Oil, etc. .....galls.	4,370,276	1,442,639	124,208	45,789
Other sorts .....cwt.	30,977	44,195	21,339	26,700
Total.....value	—	—	160,841	99,259
Copper, Sulphate of ..tons	379	2,034	8,695	43,101
DISINFECTANTS, INSECTICIDES, ETC. .....cwt.	32,906	39,552	85,028	101,660
Glycerine, Crude .... „	17,990	122	48,337	260
Glycerine, Distilled .. „	28,294	9,089	105,259	37,054
Total ..... „	46,284	9,211	153,596	37,314
Potassium Chromate and Bichromate .....cwt.	2,762	1,505	6,213	3,130
Potassium Nitrate .. „	787	1,098	1,550	2,269
All other Potassium Salts ..... „	3,014	2,722	18,860	14,701
Total ..... „	6,563	5,325	26,623	20,100
Sodium Carbonate ..cwt.	436,685	363,893	118,297	107,778
Sodium Caustic ..... „	130,535	120,120	106,623	90,237
Sodium Chromate and Bichromate ..... „	3,554	1,526	6,437	2,391
Sodium Sulphate ... „	289,915	276,891	44,701	34,550
All other Sodium Compounds ..... „	42,527	40,509	64,161	66,662
Total ..... „	903,216	802,939	340,219	301,618
Zinc Oxide .....tons	182	107	7,059	4,614
Chemical Manufactures, etc., all other Sorts. value	—	—	326,672	278,417
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs) .....value	—	—	1,483,709	1,096,458
DYES AND DYESTUFFS—				
Products of Coal Tar.cwt.	9,641	8,114	99,362	55,667
Other Sorts ..... „	8,225	4,501	9,536	5,598
Total ..... „	17,866	12,615	108,898	61,265
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground ..cwt.	1,156	1,041	765	511
White Lead (dry).. „	17,822	5,194	43,122	12,788
Paints and Colours, in Oil or Water.. „	29,107	53,526	65,562	129,605
Paints and Enamels Prepared ..... „	29,229	26,193	90,721	93,493
All other Sorts ... „	45,745	51,826	95,336	101,714
Total ..... „	123,059	137,780	295,506	338,111
Total of Chemicals, Drugs, Dyes and Colours .....value	—	—	2,171,003	1,777,322

Oil and Colour Chemists' Discussion

Dr. H. H. Morgan on Paint Exposure Tests

A JOINT meeting of the Oil and Colour Chemists' Association and the Incorporated Institute of British Decorators was held at the Painters' Hall, London, on Friday, December 11, Mr. A. S. Jennings (President of the Incorporated Institute of British Decorators) was in the chair and was accompanied by Dr. H. Houlston Morgan, President of the Oil and Colour Chemists' Association.

Mr. JENNINGS, in opening the meeting, said it was contemplated that a great deal could be learned from such joint discussions as these, and if, as seemed probable, this joint discussion was a success, an effort would be made to have two of them each session. The discussion that evening had been divided into three parts, viz., craftsmanship, undercoats, and atmospheric environment. The discussion was to have been opened by Mr. Will Cantrill of Manchester, but he had been prevented from coming but had sent in a few notes. As regards craftsmanship, Mr. Cantrill pointed out the necessity for the operator to know his job thoroughly. Everything pointed to the comprehensive nature of the training of painters and decorators if the prestige of the craft was to be maintained.

Intimate Contact with Surface

Mr. R. P. L. BRITTEN said that whilst the modern tendency was to use mechanical means for applying paints and varnishes, there was no doubt that the finest results could only be obtained by hand work. One of the essentials was that the durability of a painted surface depended upon intimate contact between the paint and the surface. If a liquid be put into contact with a solid, the molecules of the liquid tended to become oriented at the surface and there were adsorption effects. The molecular forces were far in excess of any mechanical forces which could be brought to destroy the bond formed between the paint and the surface. If it was desired to protect a material against water, it was essential that the material should not be wet before it was painted. If it was desired to protect concrete from water and the concrete was tarred when it was wet, the first shower would wash all the tar off. On the other hand, if the concrete was quite dry when it was tarred, it would constitute a perfect protection and would not be affected by rain.

In paints the pigment particles usually took two forms. In the case of the plastic paint as against the flowing paint, the surface was not nearly so uniform, but it was easier to put on. It required more laying off to give a really satisfactory result than was the case with the more viscous paints.

Mr. NOEL HEATON opened the discussion as regards undercoats, and said that the importance of priming was sometimes lost sight of. A coal tar naphtha solvent would act as a steriliser and have a germicidal effect and might prevent serious results later. Whilst it was desirable to prevent the entry of moisture into wood, it was also desirable not to seal the wood absolutely in order that the moisture already in might escape. Another important question was the adhesion between the undercoat and the finishing coat. That was one advantage of the new cellulose finishes, viz., that there was a distinct amalgamation between the undercoat and the finishing coat.

Mr. C. A. HINDLEY said that a satisfactory method of painting galvanised iron was to sponge it first with a solution of hydrochloric acid.

Dr. H. H. Morgan's Tests

Dr. H. HOULSTON MORGAN exhibited an exposure board, and explained that in carrying out various exposure tests he had frequently noticed during the past five or six years, that with straight linseed oil paints as undercoats, two coats of varnish on the top cracked more quickly than if there were only one coat of varnish. The exposure board showed this to be the case, whilst two other portions showing three and four coats of varnish had not cracked. He asked for some views on that point.

Mr. C. H. EATON said the painter and decorator are very much in the hands of the paint chemist. Recently there had been fog, rain, snow, and frost within a period of a few days, with the result that paint which ordinarily dried in 12 hours did not dry in three days. Material was frequently delivered in tins, so constructed that it was impossible to get all the material out. Similarly varnish was sent out hermetically sealed, but when once opened there was no means provided for again sealing the tins so that the contents should not deteriorate. Unfortunately there was too great a tendency to employ the cheapest labour, except in the case of the works manager and the works chemists—they were well enough paid—and that had a great deal to do with inefficient work.

Mr. C. A. KLEIN said he was a works chemist and he could assure Mr. Eaton that the works chemists were not among the highly paid. At the present time 80 per cent. of the cost of painting was labour and the other 20 per cent. only was material. One of the troubles in London and other large cities was the smoke problem. The smoke and moisture in the air carried the sulphuretted hydrogen to our stone buildings and helped to set in decay, but even if the smoke were eliminated altogether, there would still be the trouble from the acids in the atmosphere resulting from the burning of so much coal.

Dr. H. HOULSTON MORGAN, bringing the discussion to a close, said he had been crying in the wilderness for many years upholding craftsmanship. With regard to the point as to when paint starts to decay and oxidation stops, in his opinion 90 per cent. at least of the failures of paint were not due to oxidation or any chemical action, but to mechanical abrasion, cracking, blistering, and so on. If a poor class paint be put upon an aluminium surface or a surface that would not rust, and was kept under conditions which would not allow moisture to enter, it would be years before even that poor paint would being to wear. He was afraid that Mr. Klein had rather knocked the foundation from his argument as regards the effect of eliminating smoke. He had stated that smoke particles are carriers of sulphuric acid. If, therefore, the smoke were removed it would at the same time remove a very great deal of the acid, and the amount of acid left would not cause a great deal of damage. Referring again to the exposure board which he had exhibited, Dr. Morgan said his idea as to why two coats of varnish cracked more quickly than one coat, was that the first coat was placed on top of a linseed oil paint, and by absorbing some of the linseed oil became more elastic than the second coat. The reason why the third and fourth coats did not crack so soon as the second was that the effect of the less elastic varnish on the more elastic varnish was not felt, at any rate during the period of exposure, owing to the greater thickness of material, and this thickness of varnish on the top was greater in its effect than the contractile forces going on underneath.

Ramsay Chemical Dinner

THERE was a representative company of over 200 ladies and gentlemen present at the Ramsay Chemical Dinner held in Glasgow on Wednesday, December 9. Sir Frederic Nathan, president of the Institution of Chemical Engineers, was in the chair, and the guests included Sir Donald MacAlister, Captain W. E. Elliot, M.P., Professor G. G. Henderson, president of the Institute of Chemistry, Sir Robert Robertson, Government Chemist, Sir Robert Bruce, Colonel J. A. Roxburgh, Mr. R. B. Pilcher, registrar of the Institute of Chemistry, and Mr. James Morton, Scottish Dyes (Limited).

Sir DONALD MACALISTER proposed the toast of "Sir William Ramsay and the profession of chemistry." Pleading inadequate qualifications for dealing with Ramsay's technical achievements, Sir Donald delivered a humorous and racy speech, including numerous personal reminiscences of Ramsay and typical of his personality. On one occasion he told Sir Donald that he was on the track of another element, like argon, for which he was seeking a name. Later he said, "I have dropped 'decargon,' it is bad Greek, no doubt, but my typist spelt it 'dewargone,' and that wouldn't be kind to Professor James (Dewar), would it?" Sir Donald finished his anecdotes with an appeal to his hearers to "magnify your office for the good of man, who cannot live on electrons alone, or even on tensors." The public then would be grateful for their work and forgive them their poison gases and explosives.

Sir FREDERIC NATHAN, responding, said that the profession of chemistry was a noble one, having regard to all it did for the well-being of humanity, and Ramsay was one to place all his knowledge at the disposal of the community. Without research and industrial application of chemistry our goods could not compete in the world market. There was an increasing appreciation in industry of the need of science and

doubtless with the return of prosperity more chemists would be employed.

Colonel ROXBURGH, replying to the toast of "The City of Glasgow," by Captain Elliot, said that city claimed no less than five presidents of the Institute of Chemistry, of whom Professor Henderson was one. Glasgow owed its prominence largely to co-operation between the learned institutions.

Professor HENDERSON, in submitting "The Guests," said that Captain Elliot was more than an M.P., he was a scientific man with a distinguished record. He thanked Sir Robert Bruce for the excellent educational campaign carried on through the medium of the *Glasgow Herald*.

Sir ROBERT ROBERTSON responded, and following the dinner the guests engaged in dancing.

Institute of Chemistry

Dr. Levinstein on the Status of the Chemist

A MEETING of the Manchester Section of the Institute of Chemistry was held on Monday at Manchester, the chairman, Dr. Herbert Levinstein, presiding. Certificates were presented to six associate members of the Institute.

In making the presentation, the chairman said he was glad to welcome these accessions to the ranks of a profession which was becoming more respected every day as its importance and possibilities were more fully recognised. Though that recognition had not gone to the extent that was desired it showed a great advance in comparison with the conditions which prevailed some years ago, and it was very important that those who entered the profession should set the standard of professional conduct as high as possible. Those who founded the Institute of Chemistry were the first to secure some official recognition of the status of chemistry as a profession.

Registration of Chemists

The members were aware that the Manchester Section, in conjunction with the Liverpool Section, had been very active—indeed had taken the initiative—in trying to secure the registration of chemists. That meant that the profession of chemistry would become a closer one. It carried with it an obligation to raise the standard of qualification and competence by excluding from the register those who did not possess proper professional qualifications. By doing that they would raise the status of the profession in the estimation of the public. A meeting of the Manchester Section and the Liverpool Section had been held recently, and Mr. Schofield and Mr. Evans were appointed as a sub-committee, to draw up a scheme which would be submitted to the parent body. That showed the part which the Manchester Section was now playing in the general affairs of the Institute. In the past, like most organisations of a similar character, the Institute had been run in London. It was a compliment to the Manchester Section and to the Liverpool Section, that they had been requested by the Institute to draw up a scheme of this kind for consideration. He wished also to call attention to the fact that the Manchester Section had put forward two candidates for election on the Council, Messrs. Radcliffe and Marshall, and it was very important that the members of the Section should vote for those two gentlemen. Mr. S. E. Melling had been re-elected district member, so that, with Messrs. Radcliffe and Marshall, there would be on the Council three members representing the Manchester District. It was a great advantage to have as many representatives as possible on the Council.

The meeting was followed by a social evening of an informal character, to which the members had been invited to bring friends. It was exceptionally successful, the attendance exceeding 260. Members and friends gave songs, recitations, and exhibition dances, and light orchestral and dance music was rendered.

German Tartaric Acid Makers Recombine

THE three manufacturers of tartaric acid in Germany, Joh. A. Benckiser, of Ludwigshafen a. Rh.; C. H. Boehringer Sohn, of Nieder-Ingelheim; and the Chemische Fabrik vorm. Goldenberg, Geromont & Co., of Wiesbaden, have re-established a common selling agency at Wiesbaden, under the name of Vereinigte Weinsäurefabriken G.m.b.H. It is understood the combination is for export selling as a means of stabilising prices. The three firms formerly had a selling combination, but this has been inoperative for several years.

Naylor Brothers' Conference and Dinner

Success through Co-operation

ON Thursday, December 10, Naylor Brothers (London), Ltd., of Slough, completed a highly successful business conference with their annual dinner, held at the Castle Hotel, Windsor. The firm's representatives and heads of departments had been hard at work for the four preceding days, and the dinner was the occasion for giving rein to the good fellowship prevailing throughout the firm. Some 80 people sat down.

Immediately following the toast of "the King" the Chairman (Mr. Samuel E. George) read a telegram from Mr. H. S. Naylor who, with his son, Mr. G. St. G. Naylor, is at present on a trip round the world. Mr. George expressed the general regret at Mr. Naylor's absence and spoke of the work done by Mr. Naylor, the example he set, and the help he offered to the younger members of the firm. Mr. Naylor's health was drunk with musical honours and a cablegram was despatched to him in New Zealand.

Mr. G. G. Craig, another director of the firm, afterwards proposed the health of the representatives. He mentioned the close co-operation and friendly relationship existing between the directors, representatives, and staff during the troubled time through which the country as a whole had been passing, and gave business figures for the past year, showing substantial increases both at home and abroad. He also mentioned the formation of Naylor Brothers (Scotland), Ltd., at Glasgow and Naylors of Canada in Montreal and Toronto as steps forward in the progress of the parent company. He referred to the hardships which certain inhabitants wished to impose on the neighbourhood by restricting the activities of the firm in the making of varnish, which restrictions would result in the discharge of many employees and considerable harm to the district as an industrial town. He also mentioned that the restriction of fumes had engaged the attention of the firm for several years, and that some months ago Mr. S. E. George had made a journey to America to investigate some plant there of which great things were expected.

Mrs. S. E. George then presented prizes for the Representatives Championship for 1925 to Messrs. C. J. Hall, A. H. Cole, and W. R. Shackleford, and Mr. H. Moreland Naylor also presented Mr. C. J. Hall with the prize offered by his father to the representative opening the most new accounts during 1925. Mr. A. H. Cole spoke a few words in reply, referring to the high regard in which Mr. Naylor was held by all who knew him, and the help the representatives received at all times from the directors and headquarters staff.

Mr. A. J. Hart replied on behalf of the representatives.

Mr. S. E. George proposed the health of the Guests, amongst whom he mentioned Mr. J. B. Graham, M.C., Secretary of the Varnish and Paint Federation; Mr. Bellasis, of the Federation of British Industries; Mr. Jenner of the "Paint More—Save More" Campaign; Mr. Gable of the Meerloo Publicity Service; Mr. and Mrs. Oliver, of Slough; Mr. B. Hesketh; and Mr. Jennings of *The Decorator*.

Mr. R. H. Clarke, sales manager, proposed the health of the ladies, to which Mrs. Fraser replied, taking the opportunity to convey the thanks of them all to Mrs. S. E. George, who had entertained them so well during their stay in the district.

Interspersed throughout these speeches was a musical programme contributed by Mr. Burch Elton (violinist), the quartette of the Gentlemen of H.M. Royal Chapels, and Miss Marion Browne (contralto). At 10.30 an informal dance was begun and continued till midnight.

Sweden's Progressive Wood Pulp Industry

THE Swedish wood pulp industry has experienced a satisfactory season, according to the latest Swedish Economic Review. As regards chemical pulp (sulphite and sulphate) it was calculated that about 90 per cent. of the annual production has been placed already, and there is little supply to meet demands. Some 40,000 tons have already been sold for delivery next year; and prospects are good. The paper industry is improving, but there is a depression in the iron trade. The iron ore export business is satisfactory and progressive, with Germany the chief market. Imports of mineral oils and potassium nitrate have increased considerably during the last four years.

Coal and Oil Research at Birmingham

PROFESSOR K. NEVILLE MOSS, of the Mining Department of Birmingham University, read a paper before the South Staffs Institute of Mining Engineers on Monday on "The New Coal Treatment Laboratory at Birmingham University." At present the fuel oils of low temperature carbonisation were not comparable with the products extracted from crude natural oil, and the amount produced of gas of high calorific value was too small to make the process commercially profitable. Complete gasification was not at present economically sound as the gas obtained (water gas) was of a low calorific value, and consequently expensive to distribute unless enriched with oil, which added considerably to the cost. Experts in the Mining Research Laboratory of Birmingham University, knew that much fundamental scientific work had yet to be done before we could hope to see the faintest possibility of a commercial proposition in the liquefaction of coal. The problem would receive careful consideration by Mr. J. Ivon Graham and his co-workers.

It was the intention of the Mining Department to thrash out some, if not all, of the problems in connection with the use of pulverised coal. These will include a study of the effect of varying the percentage fineness of the powdered coal used and the limiting economic aspects of fine grinding; the effect of the carbon-volatile ratio on efficiency; and to determine the position of the isotherms in the combustion chamber and how they could be altered by introducing secondary air; or by varying the density and velocity of coal-dust injection. "Colloidal fuel" was the name given to an almost stable mixture of fuel-oil and finely-ground coal which possessed properties of a colloidal nature. The chief advantages claimed for coal-oil mixtures included (1) that fine coal might be put to profitable use by giving it a liquid-fuel value; (2) the heat units were as efficient as those in oil; (3) colloidal fuel had a greater calorific value per volume than ordinary fuel oil, but less by weight; and (4) the cost of heat units was much lower than in ordinary fuel-oil. Colloidal fuel was not an established industry, but it merited a thorough investigation. It was essential that the equipment should be so designed that the experimental data would be comparable with that obtained in practice.

Sir John Cass Technical Institute

THE annual distribution of prizes and certificates to students of the Sir John Cass Technical Institute, London, was held on Tuesday. Sir T. Kirke Rose, D.Sc., past president of the Institution of Mining and Metallurgy, distributed the prizes and certificates, and delivered a lecture on "Metallurgy and Minting."

The Rev. J. F. MARR (chairman of the Governing Body of the Institute) presided. In his statement he said that the policy of concentration of effort and resources on a small group of departments had been fully justified. Real progress was made in consolidating, strengthening, and correlating the work of the science departments, which were still in need of an extension of accommodation, especially for advanced and research work. Early this year, Dr. Keane, the Principal, was granted a year's leave of absence, in the hope that his health would be fully restored, and it was reported that his health had very greatly improved. In his absence, Mr. George Patchin was appointed acting-principal. A total of 34 students had been successful at the examinations of the University of London during 1925. In the Department of Metallurgy an extension of the curriculum had been made to meet the requirements of students desiring to prepare for the external degree of B.Sc. in Metallurgy of London University. Two additional courses, "Electro-Metallurgy" and "Fuels, Refractories, and Furnaces," had been included.

Sir T. KIRKE ROSE dealt with coinage from the artistic viewpoint and reviewed minting methods from earliest days. He outlined the properties of dies and plant, and referred to the problems of corrosion and abrasion which materially affected the life and value of a coin.

Chemical Society Library

THE Library of the Chemical Society will be closed for the Christmas Holidays at 1 p.m. on Wednesday, December 23, and will reopen at 10 a.m. on Tuesday, December 29.

Chemical Matters in Parliament

Government and British Cellulose Investment

Mr. McNeill (House of Commons, December 9), in reply to various questions, said that during the war a sum of £1,150,000 was advanced by the Government to the British Cellulose and Chemical Manufacturing Co. for the purpose of manufacturing cellulose acetate, which was urgently required for war purposes. Nevertheless, the responsibility for the prospectus was not with the Government. The present Government holding was £500,000 of these shares.

Duties on Gas Mantles

In the House on December 6 the Safeguarding of Industries (Customs Duties) Bill, which provides, among other things, for the imposition of the proposed duties on gas mantles, was carried by 245 to 132.

Accidents in Heavy Chemical Trade

Mr. J. Baker (House of Commons, December 10) asked whether in view of the fact that the Chief Inspector of Factories had stated that only 3 out of 5,000 accidents in the heavy chemical trade were due to breaches of Regulations it was proposed to introduce further Regulations.

Sir W. Joynson-Hicks said that the 5,000 accidents referred to represented the total number of accidents reported from all classes of works in the Warrington district: only 676 occurred in the chemical trade. The great majority appeared to have been due to risks which were incidental to every class of industry and which, for the most part, were not preventable by Regulations. The only hopeful way of dealing with this class of accidents was to establish safety organisations in individual factories. Everything possible would be done by the Factory Department to stimulate this procedure.

Risks in Varnish Manufacture

Sir W. Joynson-Hicks (House of Commons, December 10), in reply to Mr. J. Baker, said that very few accidents occurred in the manufacture of nitro cellulose dopes or varnishes dissolved in acetone, amyl acetate or similar solvents. The existing Regulations concerning ventilation were adequate, but the Chief Inspector was conducting special inquiries in regard to fire and explosion risks.

Chemical Poisoning

Sir W. Joynson-Hicks (House of Commons, December 10), in reply to Mr. Robinson, said that two cases of carbon bisulphide and 30 cases of aniline poisoning had been reported since February 1, 1925, but no case of chronic benzene poisoning. Special steps were taken to diminish the risk by following up each case, and by the enforcement of the special precautions required by the Chemical Works Regulations of 1922.

Arsenic in Apples

Sir K. Wood (House of Commons, December 14) said that the authorities were taking steps to have the effects of spraying removed before the apples were exported to this country.

Dyers and British Products

Mr. Kelly (House of Commons, December 16) asked the President of the Board of Trade if he was aware that the dyers in Lancashire were threatened with litigation if they used British-made naphthol products; and would he give the necessary cover against litigation if these dyers do as directed by the officials. Mr. Kelly asked if he was aware that dyers in Lancashire were prevented from getting licences to import naphthol A.S. and S.W., thus causing this comparatively new trade to be handed over to Holland and other Continental dyers, and if he would grant these licences to dyers in this country.

Sir Burton Chadwick said licences were not being granted for the importation of naphthol A S. and S W, since adequate equivalents were made in this country. He understood that a German company claiming to own certain patent rights in respect of the process by which dyestuffs of this kind are utilised was asking royalties from the users of the British equivalents. The whole matter was now under consideration, but he had no reason to think that any consequences of the kind suggested by the hon. member were being experienced.

Mr. Kelly asked if the Board of Trade was prepared to assure these manufacturers that there would be no consequences through action at law if they took the advice of the Board. Sir B. Chadwick said he could not answer that.

British Association of Chemists

The Question of Registration

THIS question is one which, of course, does not concern the Association alone, but one upon which it can be said that it has specialised. The Institute of Chemistry also lately reviewed the situation at their conference at York, where a resolution was passed recommending that the Institute in consultation with the Association, the National Union of Scientific Workers, and other interested bodies, should thoroughly explore the whole situation. From the time of its formation the Association has continually advocated a definite movement in this direction, and its efforts have largely contributed to the interest in the subject that is now everywhere apparent.

It is generally agreed that registration is a desirable policy, and the only objection has been that it is difficult to realise in practice. This is to some extent true, but the difficulties are not insurmountable. It has been suggested that it would be a matter of difficulty to get into touch with all who practise chemistry in this country, but this matter would to a large extent adjust itself. Chemical opinion is difficult to gauge, but it appears probable that the majority of chemists would welcome a scheme of registration. If this be the case, they would probably approach the body or bodies concerned with the administration of a registration scheme.

The Association views with great dislike the opinion that it is undesirable to make an attempt to make chemistry a "close profession." That a seeming injustice might be done to some individuals is not impossible; but a sentimental consideration for a small minority must not be permitted to stand in the path of the welfare of a great profession. Nor does it seem probable that any injustice need be done, provided that all who practise chemistry will co-operate for a common end.

The advantages of registration are obvious, but it will not be out of place shortly to discuss them. Every profession which has adopted some form of registration has increased its prestige. Medicine and architecture are examples. The conditions of enrolment once having been defined, the confidence of the public is greatly increased, and the status of the profession, to some extent, automatically improved.

Of all professions, and particularly of chemistry, it is true that serious overcrowding is on the increase. A "close" profession is able to regulate this, and, by its restrictions can exclude those whose inferior qualifications tend, first, to threaten the economic safety of the whole body, and secondly, to bring its prestige into contempt. Among the first of our ailments is the accepted view that "anyone can call himself a chemist."

It is further true that a "close" profession compels a spirit of esprit de corps which no unorganised body can command and is to one that is "open" as a disciplined army is to an unorganised rabble. There was never a time when discipline was more necessary than to-day, and any society which endeavours to regulate and direct the crasser sort of individualism deserves upon this head alone the support of all reasonable and thoughtful men.

It is well known to all who are even remotely interested in the activities of the Association that it has, through good report and evil report, consistently contended for this principle. And the Association is assured that when the time to appeal to professional opinion arrives—and it is close upon us—that it will not appeal in vain. H. T. F. R.

Markets in Esthonia

OFFICIAL trade figures for a recent month in Esthonia indicate considerable chemical and allied imports. Chemicals, dyes, etc., were imported to the value of 25,906,710 E.marks, but exports reached 25,274,360 E.marks. In the case of fertilisers the value for the month was no less than 27,237,280 E.marks, and coal, coke, oil shale were taken to the extent of 24,975,150, and no exports are recorded. Oils, fats, and relative products were imported to the value of 43,686,270 E.marks and exports were only 97,200 E.marks. Germany claims the largest trade with Esthonia, figures being 231,123,590 E.marks for the month. The United Kingdom is third largest exporter to Esthonia with 96,833,680 E.marks for the same period. Exports from Esthonia to the United Kingdom for the month totalled 167,462,840 E.marks.

Monthly Dyestuffs Supplement

New Feature in "The Chemical Age"

BEGINNING with the new year, THE CHEMICAL AGE will commence the publication of a Dyestuffs Supplement to appear regularly in the second issue of each month. The new feature will contain topical notes on important developments, written by technical experts and in the first issue outstanding features in the trade during 1925 will be dealt with under this head. Market reports from our own correspondents in the principal dyestuffs areas will be a regular feature in the Supplement, affording a summary of the condition of business throughout the country. The month's commercial developments will also be dealt with in the reports. Among the popular articles will be the dyestuffs "Who's Who," outlining the careers of the leaders of the industry, while another feature, "Around the Works," will form a history of the principal manufacturing and dyeing plants in the country.

The first Dyestuffs Supplement will appear in the issue of January 9, the subscription to THE CHEMICAL AGE, including the Supplement and a *free* copy of THE CHEMICAL AGE Year Book (published separately at 10s. 6d.), being 21s. per annum post free (abroad 26s.). The twelve monthly issues containing the Supplement will be obtainable separately at 7s. 6d. (abroad 10s.).

The reports of dyestuffs matters, in particular the abstracts of patent literature, will, of course, continue to be a usual feature of the ordinary issues. The Editor of THE CHEMICAL AGE will welcome correspondence on all matters relating to dyestuffs, and the Supplement will be at the service of the trade in all matters relating to its welfare.

Magnetic Separating Machines

A MEETING of the Institution of Chemical Engineers was held in London on Wednesday, December 9, when Colonel B. I. Rolling, D.S.O., read a paper on "Machines used in Magnetic Separation." Within the last sixteen years, it was pointed out, the development of magnetic separation had been greatly accentuated, and at present there were a number of types available, some of which work at high intensity and are quite elaborate. Up to date there appeared to be three distinct uses for magnetic separation: (1) The concentration of weakly magnetic ores—high intensity separation. (2) Slag reduction and the reclaiming of unburnt coal. (3) Removal of iron content from scrap material or from flowing material—*e.g.*, grain, sugar, for refining clay, chemicals, etc.

Several machines were described in some detail, and in the discussion that followed Mr. H. N. Ridge, Professor J. W. Hinchley, and Mr. W. M. Mordey took part.

Report on Atmospheric Pollution

THE eleventh annual report of the Committee for the Investigation of Atmospheric Pollution has just been issued. Section 1 deals with the deposit of impurity at forty-eight different stations. The deposit of tar was lower than the average at most stations. There was little difference in the deposit of sooty matter, but the total impurity was generally somewhat less than the average. Section 2 deals with the automatic recorder for suspended impurity, and the effect of wind in governing the concentration of impurity is also dealt with at length. Section 3 describes dust counter observations made in different countries. There are also observations on settlement during smoke fogs. In Section 4 the special researches undertaken by the Committee are described.

Copies of the publication are obtainable from H.M. Stationery Office, price 5s. 6d.

Synthetic Nitrate Manufacture in Norway

THE Norsk Hydro-Elektrisk Kvaelstof Aktieselskab, in its annual report for 1924-25, says that its production of nitrate has increased by 15 per cent., and that there is undoubtedly a great future for the manufacture and sale of synthetic nitrate. The production of Chili nitrate will reach about 2,500,000 tons this year, the production of atmospheric nitrogen 3,000,000 tons, and the production of nitrogen at the gas works and blast furnaces 1,500,000 tons. While the production of the artificial product increases, says the report, that of natural nitrate is likely to remain stationary or diminish.

From Week to Week

TWO MEN WERE INJURED by an explosion at the gunpowder mills of Curtis and Harvey at Hounslow on Tuesday. The damage to property was slight.

THE FEES AT ALL FRENCH UNIVERSITIES and medical colleges will be almost doubled as from January 1, and matriculation fees for foreigners will be especially increased.

THE VOTING on Thursday, December 10, among the Scottish shale miners and oil workers on the question of acceptance of the terms of settlement resulted in 3,890 for acceptance, and 915 against.

A GIFT OF $600,000 has been made by Dr. W. H. Nichols, chairman of the Allied Chemical and Dye Corporation to New York University, for the erection of a chemical building. Dr. Nichols was a graduate of the class of 1870.

SIR MAX MUSPRATT speaking at Liverpool on Tuesday on The Coal Problem from the Outside," proposed that the industry should be placed under a central and district boards, with strong powers, with a view to closing down uneconomical mines, with compensation to the owners and proper provision for the displaced miners.

THE CHEMICAL PRESERVATION OF TIMBER is now the subject of extensive research by the Forest Products Laboratories of Canada. There are now ten wood treating plants in Canada and three more under construction. The annual loss through decayed timber is estimated at $35,000,000.

FOR SELLING WORKS SECRETS the Supreme Court of Germany has sentenced Walter Pullerjahn, a former worker at the Wittenau Chemical Works, Berlin, to fifteen years' penal servitude for high treason. The Court found that he had betrayed for money secrets of the works to the inter-Allied Military Control Commission which resulted in the inspection of the works by the Commission.

LT.-GENERAL SIR WILLIAM FURSE has been appointed Director of the Imperial Institute, as from January 1, 1926. Sir Richard Redmayne, who has acted temporarily as director during the period of organisation and amalgamation with the Imperial Mineral Resources Bureau, retires at his own request at the end of the year, and will become chairman of the Institute's Advisory Council on Minerals.

AT THE WEST RIDING ASSIZES last week Harold Ernest Dadswell, 22, of Leeds, and Eric Alwyne Peters, 24, of Woodlesford, were found not guilty on charges of having, as dealers of the Methley Chemical Co., Ltd., fraudulently converted to their own use £489 13s. 10d., the property of the company. A limited company had been floated and debts of an original partnership were paid on the company's cheques which, because they held all the shares, the defendants claimed was only dealing with their own money.

THE OPENING OF A STORE and offices in London by the Aktiengesellschaft fur Anilinfabrikation of Berlin, the fourth largest unit in the recently incorporated combine of German dyestuff manufacturers, is reported by *Fairchild's Bulletin*. This concern produces 6 per cent. of the total German dye output. There is a rumour that the I.G. may lease a British factory to produce indanthrene dyes in this country, says the report, but it must be remembered, in regard to the first item, that under the Dyestuffs (Import Regulation) Act, licences will have to be obtained before dyes can be brought into this country.

THE FORTY-SECOND DAY of the hearing of a case relating to two patents for the manufacture of artificial silk from cellulose, which are being attacked on the ground that they are invalid, their subject matter having been commonly known, came before Mr. Justice Eve in the Chancery Division on Wednesday. The registered legal owners of the patents are a Swiss company, and two petitions have been brought by Courtaulds, Ltd., to have the patents revoked. The trial began in March last, and much scientific and technical evidence has been given by experts from abroad and in this country. The exhibits, chemical solutions, and cellulose filaments and threads fill a considerable portion of the Court. A conservative estimate of the costs of the case puts them at £1,000 a day. There are six counsel engaged, and since the case opened the death of Mr. J. Hunter Gray, K.C., leading counsel for the patentees, has occurred.

UNIVERSITY INTELLIGENCE includes the following announcements.—*Manchester*: Mr. J. C. Smith, M.Sc., Ph.D., has been appointed assistant lecturer in Chemistry; Professor A. H. Gibson has been elected Dean of the Faculty of Science; Mr. R. F. Treharne has been recommended for the degree of Ph.D. The Sir Clement Royds Memorial Scohlarship (chemistry) has been awarded to Dr. E. N. Mottram, M.Sc. There is no award for the Hill Prize in Bio-Chemistry.—*Oxford*: A senior demyship in Magdalen College has been awarded to Mr. W. Hume-Rothery for three years for research in chemical metallurgy.—*Glasgow*: It is reported that the Chair of Natural Philosophy will be filled by Dr. E. Taylor-Jones, Professor of Physics at University College, Bangor.—*Cambridge*: Mr. R. G. W. Norrish, Ph.D., who gained first class honours in the Natural Sciences Tripos, Part II, 1921, with distinction in chemistry, has been elected a junior fellowship at Emmanuel College, to be held for three years.—*Durham*: Messrs. L. A. Sayce and G. E. Stephenson have been recommended for the degree of Ph.D. in chemistry.

FOR SMUGGLING SACCHARINE, a seaman was fined £32 6s. 9d. at Salford on Wednesday.

THE SALE of the Sulphate of Copper Works, Landore, which was to have taken place on Thursday, was cancelled.

THE BADISCHE ANILIN company have bought an estate near Gatersleben, in the Harz mountains, for a factory site.

Mr. RICHARD LAKIN has been appointed managing director of the Holborough Cement Co., and Mr. A. Clarke Vincent has been elected a director.

MR. H. P. KACHARIA, of Bombay, interested in fine chemicals, is now in London and may be addressed c/o J. Smith and Partners, Ltd., 36, Camomile Street, London, E.C.3.

"THE HILL," the late Lord Leverhulme's Hampstead house has been sold to Lord Inverforth, of Arnos Grove, Southgate, London, who was Minister of Munitions during the war.

SIR WILLIAM EDGE, director of W. Edge and Sons, chemical manufacturers, of Bolton, is to accompany Mr. Lloyd George on a visit to Italy lasting about three weeks. It was arranged that he should leave on Friday.

THE SALE BY AUCTION is announced, and will take place at an early date of the British Carbide Factories, Ltd., chemical manufacturers, Bank Street, Clayton, Manchester. Catalogues may be had, when ready, from E. Rushton, Son and Kenyon, 13, Norfolk Street, Manchester.

JAPANESE DYESTUFF MANUFACTURE is now to be encouraged by Government subsidies in respect of certain products and the official ordinance has now been published, taking effect as from October 15. Translations of the legislation are now available for inspection at the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

THE PRIESTLEY CLUB, founded at Leeds in 1875, held its jubilee on Tuesday, and at a dinner at Leeds University the principal guests were Sir James Irvine, St. Andrews; Dr. J. B. Baillie, Leeds; and Professor A. Smithells. Professor Dawson, head of the Physical Chemistry Department of Leeds University, has been secretary of the club for 23 years.

A REPORT has just been issued on the work of the British Silk Research Association by the Department of Scientific and Industrial Research. Tribute is paid to the work of the director of the laboratory at Leeds University and to the staff. Important investigations have been undertaken on the degumming and dyeing of silk, and much work has been done on the chemical and physical properties.

A NEW BINDER FOR COAL BRIQUETTING is stated to have been invented by Mr. F. C. Thornley and plant has been erected at Stromness, Orkneys, at a cost of £75,000. The capacity is 1,500 tons to 2,000 tons per week. The active constituent is seaweed, from which the salts are extracted, and which is then ground and mixed with about 50 per cent. of its bulk of bitumen. The briquettes, it is stated, burns well in any circumstances, and is smokeless.

THE NECESSITY FOR SCIENTIFIC RESEARCH in the factory, involving the appointment of works chemists, was emphasised by Mr. J. E. Fletcher (N. Hingley and Son, ironmasters of Dudley), and a member of the Cast Iron Research Association, at a meeting on Monday at Dudley he stated that the most systematic research work, in its general application to industry, was being done in Germany. He also visited many laboratories which showed how keenly alive America was to the development of the scientific side of industry; he strongly urged the necessity, in this country, wherever possible, of the engagement of a works chemist. He was convinced that those works in this country which were without the scientific side would sooner or later go to the wall.

"SULPHIDE DYES" was the subject of a lecture by Dr. H. H. Hodgson, head of the Colour Chemistry Department of the Huddersfield Technical College, on Tuesday. He pointed out that, although hundreds of sulphide dyestuffs have been placed on the market, some of them of outstanding value, yet with a few simple exceptions their chemical constitution was still wrapped in mystery. The aim of his research had been to study in the first place the action of sulphur on a large number of simple aromatic amines for the purpose of ascertaining the fundamental processes involved. This was preparatory to tackling the still more complex problem of unravelling the ultimate mechanism, and then as a corollary the attempting of the synthetic preparation of these wonderful colours. The lecturer dealt with mono-chloroderivatives of aniline in which definite thionation stages had been observed on the way to the present complex.

Obituary

MR. ALFRED WILLIAM GERRARD, aged 82, on Wednesday at Moseley. Over 30 years ago he assisted in the foundation of Cuxson, Gerrard and Co., Ltd., manufacturing chemists, of Oldbury, and for some years he was one of the board of examiners for the Pharmaceutical Society.

PROFESSOR WILLIAM MYERS, M.Sc. (Tech.) at Manchester on Tuesday, aged 61. A month ago he was appointed head of the Textile Section of the Manchester College of Technology. He had previously served as head of the weaving department and at Darwen and Bolton Technical Schools. He was an authority on textile technology and had written on the subject.

References to Current Literature

British

ADSORPTION.—Negative adsorption. The surface tensions and activities of some aqueous salt solutions. A. K. Goard. *Chem. Soc. Trans.*, November, 1925, pp. 2451–2458.

ANALYSIS.—Improvements in analytical crucibles. J. D. Main Smith. *J.S.C.I.*, December 11, 1925, pp. 539–540T.

The volumetric determination of soluble sulphates by means of barium chloride and potassium stearate. H. Atkinson. *Analyst*, December, 1925, pp. 590–600.

An electrometric study of the separation of the iodide, bromide and chloride of silver. H. T. S. Britton. *Analyst*, December, 1925, pp. 601–604.

ARTIFICIAL SILK.—Artificial silk. J. Huebner. *J. Soc. Dyers and Col.*, December, 1925, pp. 387–401.

CRYSTALLOGRAPHY.—The crystalline structure of hexachlorobenzene and hexabromobenzene. W. G. Plummer. *Phil. Mag.*, December, 1925, pp. 1214–1220.

DYESTUFFS.—Importance of the synthetic dyestuffs industry. J. Turner. *J. Soc. Dyers and Col.*, December, 1925, pp. 384–387.

FERMENTATION.—The fermentation of cacao shell. A. Churchman. *J.S.C.I.*, December 11, 1925, pp. 540–542T.

Researches on the fermentation of dried tobacco. Parts I and II. A. Fodor and A. Reifenberg. *Biochem. J.*, No. 5, 1925, pp. 827–835.

OPTICALLY ACTIVE COMPOUNDS.—The resolution of an asymmetric arsenic compound into its optically active forms. W. H. Mills and R. Raper. *Chem. Soc. Trans.*, November, 1925, pp. 2479–2483.

Investigations on the dependence of rotatory power on chemical constitution. Part XXVII. The optical properties of *n*-alkyl-*p*-toluenesulphinates. H. Phillips. *Chem. Soc. Trans.*, November, 1925, pp. 2552–2587.

SYSTEMS.—The system silver sulphate-aluminium sulphate-water at 30°. R. M. Caven and T. C. Mitchell. *Chem. Soc. Trans.*, November, 1925, pp. 2550–2551.

The equilibrium in the systems aluminium sulphate-copper sulphate-water and aluminium sulphate-ferrous sulphate-water at 25°. V. J. Occleshaw. *Chem. Soc. Trans.*, November, 1925, pp. 2598–2602.

VITAMINS.—A delicate colour reaction for the presence of vitamin A. O. Rosenheim and J. C. Drummond. *Biochem. J.*, No. 5, 1925, pp. 753–756.

French

ACIDS.—The action of halogens on acrolein in dilute aqueous solution and some trihalogen propionic acids. A. Berlande. *Bull.Soc.Chim.*, November, 1925, pp. 1385–1394.

ADDITION COMPOUNDS.—Molecular combinations. J. Martinet and L. Bornand. *Rev. gén. des Sciences*, October 30, 1925, pp. 569–577.

ADSORPTION.—Researches on the adsorption of dissolved materials. J. Bancelin. *J. Chim. Phys.*, October 30, 1925, pp. 518–555.

AMIDES.—Catalytic decomposition of amides. A. Mailhe. *Bull. Soc. Chim.*, November, 1925, pp. 1394–1397.

The amide of phenyl-α-oxycrotonic acid. J. Bougault. *Bull. Soc. Chim.*, November, 1925, pp. 1420–1436.

BISMUTH COMPOUNDS.—The nitrates of bismuth. M. Picon. *Bull. Soc. Chim.*, November, 1925, pp. 1365–1375.

CATALYSIS.—The applications of catalysis in chemical industry. Part III. Hydration and dehydration reactions. P. Pascal. *La Technique Moderne*, December 1, 1925, pp. 757–764.

COAL GAS.—The wet purification of coal gas. C. Berthelot. *Chim. et Ind.*, November, 1925, pp. 663–679.

CORROSION.—Study of the comparative corrosion of cast iron in sulphuric acid of different degrees of concentration. G. Delbart. *Compt. rend.*, November 23, 1925, pp. 786–788.

CRYSTALLISATION.—Some progress made in industrial crystallisation. Part II. J. H. Frydlender. *Rev. Prod. Chim.*, November 30, 1925, pp. 757–760.

DRUGS.—Some attempts at the identification of adaline. C. Genot. *Chim. et Ind.*, November, 1925, pp. 679–685.

ETHERS.—The question of cyclohexyl ether. V. N. Ipatieff and J. Orlof. *Compt. rend.*, November 23, 1925, pp. 793–795.

NITRO-CELLULOSES.—The stability of the nitrocelluloses. J. Duclaux. *Rev. gén. des Colloides*, September, 1925, pp. 257–263.

REACTIONS.—Action of silica on barium and magnesium sulphates. G. Marchal. *Compt. rend.*, November 23, 1925, pp. 784–786.

REFRACTORIES.—Fractional fusion of refractory products. R. Hustin. *Chim. et Ind.*, November, 1925, pp. 691–692.

RUBBER.—The structure of rubber. Part II. P. Bary. *Rev. gén. des Colloides*, September, 1925, pp. 263–269.

SULPHATES.—Investigation of the decomposition of metallic sulphates by heat. Part III. G. Marchal. *J. Chim. Phys.*, October 30, 1925, pp. 493–517.

UREA DERIVATIVES.—Benzidinic derivatives of thiourea. L. Pinto. *Compt. rend.*, November 23, 1925, pp. 788–790.

VALENCY.—The theory of positive and negative valencies. R. P. E. Saz. *Rev. gén. des Sciences*; Part I, August 15–30, 1925, pp. 455–460; Part II, September 15–30, 1925, pp. 503–509.

German

ALKALOIDS.—The synthesis of galegine. E. Späth and W. Spitzy. *Ber.*, November 11, 1925, pp. 2273–2279.

Oxyacanthine. E. Späth and A. Kolbe. *Ber.*, November 11, 1925, pp. 2280–2285.

HAFNIUM.—Preparation of pure titanium, zirconium, hafnium and thorium. A. E. van Arkel and J. H. de Boer. *Z. anorg. u. allg. Chem.*, October 29, 1925, pp. 345–350.

HYDROGENATION.—Catalytic hydrogenation under pressure in the presence of nickel salts. Part IX. Anthraquinone, phenanthraquinone and benzanthrone. J. v. Braun and O. Bayer. *Ber.*, December 9, 1925, pp. 2667–2685.

The preparation of hydrogenated polynuclear quinones. A. Skita. *Ber.*, December 9, 1925, pp. 2685–2697.

LEAD COMPOUNDS.—The chemical equilibrium between lead sulphide and its products of roasting. Part III. R. Schenck. *Z. anorg. u. allg. Chem.*, October 29, 1925, pp. 351–368.

PHOSPHORUS.—Chemistry of phosphorus. Part I. Colourless phosphorus. L. Wolff and K. Ristau. *Z. anorg. u. allg. Chem.*, November 30, 1925, pp. 403–412.

SUGAR.—The gasification of molasses residue and the recovery of potash, sodium cyanide and ammonium sulphate. Part III. F. Muhlert. *Chem. Apparatur*, November 10, 1925, pp. 211–213.

TELLURIUM COMPOUNDS.—Tellurium nitride. W. Strecker and W. Ebert. *Ber.*, December 9, 1925, pp. 2527–2539.

THIONATES.—Polythionates. Part IV. The action of caustic alkali on polythionates. A. Kurtenacker and M. Kaufmann. *Z. anorg. u. allg. Chem.*, October 29, 1925, pp. 369–381.

Miscellaneous

ACETYLENE.—The polymerisation of acetylene under the action of α particles. W. Mund and W. Koch. *Bull. Soc. Chim. Belg.*, 1925, pp. 241–255.

ANALYSIS.—Review of the methods proposed heretofore for the determination of the volatile matter in fuels. Part II. D. J. W. Kreulen. *Bull. Féd. Ind. Chim. Belg.*, 1925, pp. 255–273.

A hydrogen-electrode for flowing liquids. A. H. W. Aten and P. J. H. van Ginneken. *Rec. Trav. Chim. Pays-Bas*, November, 1925, pp. 1012–1038.

COMBUSTION.—The influence exercised by gases and vapours, inflammable or not, on the explosive limits of mixtures of gases and air. Part VI. Graphic representation. W. P. Jorissen. *Rec. Trav. Chim. Pays-Bas*, November 15, 1925, pp. 1039–1047.

PHOTO-CHEMISTRY.—Photochemical studies. Part V. Some actinoscopic reactions. A. Reychler. *Bull. Soc. Chim. Belg.*, 1925, pp. 236–241.

THERMO-CHEMISTRY.—Calorimetric researches. Part IX. The heat of combustion of α- and *meso*-tartaric acids, vacemic acid and a number of their derivatives. J. Coops and P. E. Verkade. *Rec. Trav. Chim. Pays-Bas*, November, 1925, pp. 983–1011.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each

Abstracts of Complete Specifications

242,685. HYDROCYANIC ACID, MANUFACTURE OF. Deutsche Gold- und Silber-Scheideanstalt vorm. Roessler and O. Liebknecht, 7-9, Weissfrauenstrasse, Frankfurt-on-Main, Germany. Application date, June 14, 1924. Addition to 207,830.

Specification No. 207,830 (See THE CHEMICAL AGE, Vol. X, p. 147) describes a process of manufacturing hydrocyanic acid by passing gaseous nitrogen compounds and gaseous carbon compounds, such as ammonia and carbon monoxide over activated carbon at 400°–700° C. It has now been found that the catalytic action of the activated carbon depends greatly on its manufacture. Thus acid activated carbons give a small yield of hydrocyanic acid, neutral carbons are better, and alkaline activated carbons give the highest yield. It is also found that the catalytic activity of activated carbon having an alkaline reaction can be increased by treating it further with alkaline substances. Neutral or acid activated carbons can be treated with alkaline substances to yield highly efficient catalysts. The treatment with alkali is preferably carried out by impregnating the carbon with alkali or alkaline earth hydrates, carbonates, silicates, borates, phosphates, cyanides, sulphides, etc. Other substances such as sulphates, nitrates, formates or acetates of alkalies or alkaline earths, which can be transformed into alkaline substances during the process, may also be used. The temperature employed depends on the composition of the gas, its rate of flow, and the nature of the catalyst, but is usually between 400° C. and 800° C. The activated carbon can be produced from carbonaceous material such as wood, cellulose, or salts of high molecular weight fatty acids, in the course of producing the hydrocyanic acid. Thus a mixture of powdered coal, sawdust, and caustic soda lye is dried, and ammonia and carbon monoxide passed over it at 800° C. After carbonisation, the temperature is reduced to 550°–600° C., and the production of hydrocyanic acid continued. Reference is directed in pursuance of Section 7, Sub-section 4 of the Patents and Designs Acts of 1907 and 1919, to Specification No. 207,830.

242,721. A NEW ACID AND ITS SALTS STRONGLY ABSORBING ULTRA VIOLET RAYS, PROCESS OF PRODUCING. T. Suzuki, 43, Fujimae-cho, Komagome, Hongo-ku, Tokyo, Japan, and S. Sakurai, 16, Akebono-cho, Komagome, Hongo-ku, Tokyo, Japan. Application date, August 18, 1924.

These products are strong absorbers of ultra violet rays, and may be used in the manufacture of screens for orthochromatic photography; also in the manufacture of pigments or paints for protecting fabrics, rubber, etc., from the destructive action of ultra violet light. The product is obtained by treating para sulphonic acid of phenyl hydrazine and sodium acetate with grape sugar or inverted sugar at 100° C. The sodium salt is precipitated with alcohol. An aqueous solution of a salt can be precipitated with basic lead acetate to obtain a yellow precipitate of the basic lead salt. This product may be suspended in water, and treated with hydrogen sulphide, whereby lead sulphide is precipitated, leaving an aqueous solution of the acid. It is found that a 0·01 per cent. solution of these substances 1 centimetre thick absorbs most of the ultra violet rays, while a layer 2 centimetres thick absorbs the rays completely. Several examples are given of the use of these substances for the manufacture of light filters and as protective media for protecting rubber or fabrics from sunlight.

242,689. COLLOIDAL SUSPENSIONS, PROCESS FOR THE PRODUCTION OF. G. C. Hurrell, 8, Kidbrooke Park Road, Blackheath, London, S.E.3. Application date, July 17, 1924.

This process is for producing colloidal suspensions of insoluble substances in a medium boiling below the liquefaction point of the solid at atmospheric pressures—*e.g.*, sulphur, high melting bitumens, pitches or waxes, in water. This is effected by treating the two substances in a colloid mill at a temperature above the liquefying point of the solid, and at a pressure sufficient to maintain the liquid in liquid form. It is found that an aqueous emulsion of a liquid is much more readily formed than that of a solid, and that when the emulsion is cooled the liquefied substance solidifies while still remaining in colloidal form. A protective colloid such as a soap or gum is added.

A container A contains the liquid dispersion medium C and molten solid B, and is provided with pipes G, H having valves

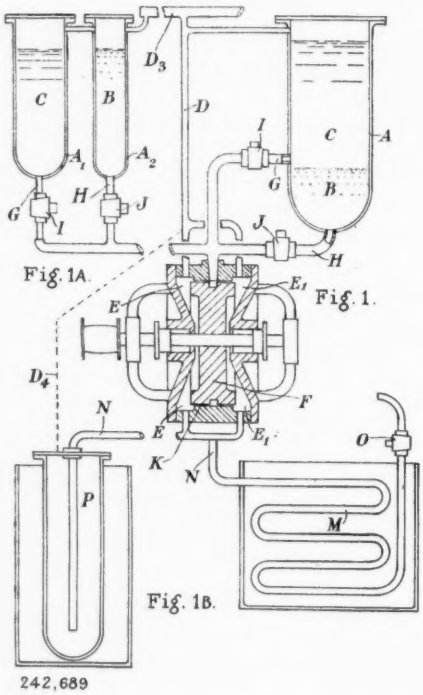


Fig. 1A. Fig. 1. Fig. 1B.

242,689

I, J which convey the materials to a colloid mill F, where they are emulsified in a space K. A vapour pipe D communicates with the discharge sides E, E^1 of the colloid mill, and with a pipe D^3 conveying high pressure steam. The emulsion passes through a pipe N to a cooling coil M, where it is cooled to a temperature below the atmospheric boiling point of the liquid, so that the molten solid solidifies, and is then discharged through the valve O. The vessel A may be replaced by separate vessels A^1, A^2 from which separate pipes convey the two liquids to the colloid mill. The cooling coil M can be replaced by the receiver P which is connected by a pipe D^4 with the vapour pipe D^3, to equalise the pressures so that the liquids flow freely through the colloid mill by gravity only.

242,739. PURIFYING OILS AND FATS UNDER A HIGH VACUUM BY MEANS OF STEAM OR THE LIKE, PROCESS OF. Metallbank und Metallurgische Ges. Akt.-Ges., 45, Bockenheimer Anlage, Frankfurt-on-Main, Germany, and W. Gensecke, 87, Homburgerstrasse, Bad Homburg vor der Höhe, Germany. Application date, September 17, 1924.

This process of purifying oils and fats by means of steam is of the kind described in Specification No. 222,093 (See THE CHEMICAL AGE, Vol. XI, p. 530). When steam is passed into oil or fat in two or more vacuum apparatus in series, the vacuum in the first apparatus into which the steam enters is lower than that in subsequent apparatus, and the treatment in the first apparatus is therefore less effective. In this

invention, the steam is withdrawn from the first extracting vessel by means of a steam injector, so that the vapour is caused to expand in the mixing chamber to a pressure which is lower than that in the extraction vessel. One or more additional extracting vessels can be arranged between the injector and the condenser. It is found that the use of the injector is more economical in respect of steam (including driving steam and induced steam) than a plant operated by a vacuum produced by the action of a condenser only.

242,805. Bleaching Powder, Method of Stabilising. A. Lamble and The United Alkali Co., Ltd., Cunard Building, Liverpool. Application date, December 15, 1924.

When bleaching powder is stabilised by the addition of quicklime so that a slight excess is left after the free water in the bleaching powder has been absorbed, the chlorine content of the product is decreased owing to the quantity of lime added. In this invention the bleaching powder is wholly or partly dried by exposing on t ays to the action of dry air free from carbon dioxide. The bleaching powder can then be stabilised by adding a small quantity of quicklime so that it is not appreciably diluted with the inactive lime.

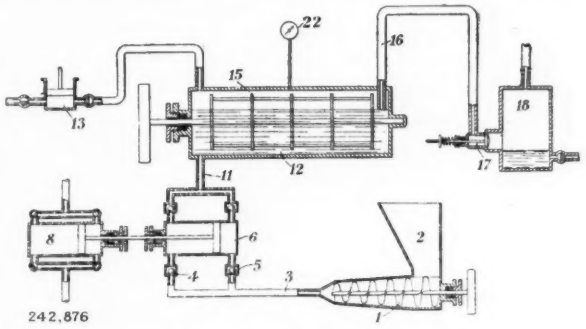
242,837. Vat Colouring Matters, Production of. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, February 18, 1925. Addition to 204,249.

Specification No. 204,249 (See The Chemical Age, Vol. IX, p. 464) describes the production of vat colouring matters by the condensation of 1-mercapto-2-amino-anthraquinone or derivatives with an aromatic compound containing at least two substituents with reactive carbon atoms such as carbonyl chloride groups, di- or trihalogen methyl groups, etc. It is now found that the mercapto derivatives can be replaced by 1-halogen-2-amino-anthraquinone or its derivatives which are treated with the above aromatic compounds, and intermediate products are obtained and treated with a substance capable of yielding sulphur such as soluble sulphides, polysulphides, or xanthogenates, in the presence or absence of condensing agents. The aromatic compounds may also be replaced by the halogenides of aliphatic dicarboxylic acids, such as oxalic or adipic acids. In an example, the product obtained by treating one molecular part of terephthaloyl chloride with two molecular parts of 1-chlor-2-amino-anthraquinone is heated with sodium sulphide, sulphur, water, and alcohol to 180°–200° C. in a pressure resisting vessel. The alcohol is then distilled off, and the residue diluted with water and filtered off to obtain the dyestuff. This is identical with that obtained from 1-mercapto-2-amino-anthraquinone and terephthaloyl chloride. Other examples are given.

242,876. Splitting Coal, Oils and other Hydrocarbons by Heating these Materials with Hydrogen under High Pressure. E. C. R. Marks, London. From Internationale Bergin-Compagnie voor Olieen Kolen-Chemie, 30, Rijnstraat, The Hague, Holland. Application date, April 27, 1925.

It is known that coal, oils and other hydrocarbons can be heated to a temperature of 300°–500° C. and pressure of 100–150 atmospheres to obtain volatile products such as benzene and petroleum. The coal may be finely powdered and made into a paste with a liquid hydrocarbon so that it can be forced into the high-pressure chamber, while if liquid hydrocarbons are treated, they are mixed with absorptive substances such as diatomite, coke ashes, alkaline earth oxides, oil shales, etc., to prevent burning. In this process difficulty is experienced owing to the uncertainty of maintaining a definite liquid level in the high pressure chamber. In the present invention, the gaseous, liquid and solid products of the reaction are withdrawn continuously from the container in such a manner that a definite liquid level is always maintained. The paste of coal or the like should be as thick as possible in this process, and this involves a further difficulty in conveying the material under pressure. This difficulty is avoided by first compressing the paste by means of a worm conveyor to 3–5 atmospheres, and then forcing the mixture into the high pressure container at 150 atmospheres by means of a high-pressure press. The required level in the container is maintained by removing the whole of the products through a pipe which dips into the container to the required depth.

The paste is supplied through a hopper 2 to a worm conveyor 1, and thence through a pipe 3 and valves 4, 5 to a press cylinder 6. The paste is then forced by a hydraulic device 8 through a pipe 11 to the reaction vessel 12. Hydrogen is continuously supplied by a pump 13, and the mixture is stirred by means of a stirring device mounted on a horizontal shaft and carrying discs 15, which are of a diameter only



slightly less than that of the vessel 12. This prevents any longitudinal mixing of the material, and ensures a sufficiently long time for the reaction. The products are forced by the internal pressure through a pipe 16 and throttle valve 17 to a container 18 at atmospheric presssure, where the liquid and solid products separate. A pressure gauge 22 is provided on the vessel 12.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection under the International Convention:—220,304 (Farbwerke vorm. Meister, Lucius, and Brüning), relating to condensation products of the anthraquinone series, see Vol. XI, p. 380; 221,205 (Soc. of Chemical Industry in Basle), relating to artificial shellac, see Vol. XI, p. 477; 222,461 (Norsk Hydro-Elektrisk Kvaelstofaktieselskab), relating to synthetic production of ammonia, see Vol. XI, p. 560; 225,172 (Kohlenscheidungs Ges.), relating to low-temperature distillation of bituminous substances, see Vol. XII, p. 87; 230,855 (A. Pictet), relating to anhydrides of disaccharides, see Vol. XII, p. 537; 231,446 (Soc. of Chemical Industry in Basle), relating to dyestuffs containing chromium, see Vol. XII, p. 563; 232,178 (Sinclair Refining Co.), relating to cracking of hydrocarbons, see Vol. XII, p. 616.

International Specifications not yet Accepted

241,232. Alkali Aluminates. Rhenania Verein Chemischer Fabriken Akt.-Ges., Cologne, Germany. International Convention date, October 13, 1924.

An aluminous material such as bauxite or clay is mixed with an alkali sulphate and heated to 1,100° C. in a current of inert gas such as combustion gases or steam, to produce alkali aluminates. The mixture may be briquetted and heated in a rotary kiln by means of producer gas, oil or coal dust, or in an electrically heated muffle. Lime or calcium carbonate may be added to form an insoluble silicate with the silica in the raw material, two molecules of calcium being present to each molecule of silica.

241,527. Dyes. Farbenfabriken vorm. F. Bayer and Co., Leverkusen, near Cologne, Germany. International Convention date, October 20, 1924.

To obtain secondary disazo dyes, a sulphonated, unsulphonated or carboxylated monoacidyl phenylenediamine or naphthylene diamine is coupled with an aminonaphthol ether or a sulphonic acid thereof, diazotised and coupled with a 1 : 8-dioxy or amino-oxynaphthalene sulphonic acid. Thus, 4-acetylamino-1-aniline-2-sulphonic acid is diazotised and coupled in presence of acetate with 1-amino-2-ethoxynaphthalene-6-sulphonic acid. The intermediate product is isolated, converted to the sodium salt, diazotised, and coupled in presence of soda with acetyl-1 : 8-aminonaphthol-4-sulphonic acid. Several other components are referred to. If the urea derivatives of phenylenediamines, such as *p*-diamino-diphenylurea, are used as first components, tetraisazo dyes are obtained.

241,536. Treating Cellulose. Köln-Rottweil Akt.-Ges. and E. Opfermann, 8, Hindersinstrasse, Berlin. International Convention date, October 17, 1924.

Cellulose is treated with small amounts of alkaline agents such as caustic soda, alkaline earth hydroxides, magnesium hydroxide, carbonates, bicarbonates, water glass, and sodium acetate, together with oxidising agents such as hypochlorites and peroxides to obtain a low-viscosity product.

(Latest Notifications.)

244,035. Process for the manufacture of CC-substituted compounds of barbituric acid and 4-dimethylamino-2·3-dimethyl-1-phenyl-5-pyrazolone. Pfeiffer, Dr. P. December 3, 1924.

244,036. Separation of liquid mixtures by distillation. Merck, E. (Firm of), and Keussler, O. Von. December 8, 1924.

244,055. Manufacture of physiologically-active substances from female internal secretory organs. Soc. of Chemical Industry in Basle. December 5, 1924.

244,070. Process for the preparation of di-substituted thio-ureas of symmetrical structure. Silesia Verein Chemischer Fabriken. December 6, 1924.

244,076. Process for the production of methane. Chemische Fabrik Griesheim-Elektron. December 3, 1924.

244,078. Process for the transformation of gypsum. Rhenania Verein Chemischer Fabriken Akt.-Ges. December 2, 1924.

244,104. Preparations for washing and cleaning. Badische Anilin- and Soda-Fabrik. December 5, 1924.

244,120. Manufacture of condensation products of the anthracene series. Farbwerke vorm. Meister, Lucius, and Brüning. December 4, 1924.

244,122. Manufacture of barbituric acid derivatives. Riedel Akt.-Ges., J. D. December 6, 1924.

244,130. Continuous apparatus for the preliminary treatment of crude benzols in order to prepare them for perfect refining. Soc. des Etablissements Barbet. December 5, 1924.

244,134. Apparatus for the catalytic combustion of mixtures consisting of ammonia and oxygen. Cederberg, Dr. I. W. December 8, 1924.

Specifications Accepted with Date of Application

221,226. Thymol from 2-cymidine, Process for the preparation of. G. Austerweil. August 31, 1923.

225,523. Lithopone, Manufacture of. Farbenfabriken vorm. F. Bayer and Co. November 30, 1923.

225,871. Melting and refining of non-ferrous metals. Barrett Co. December 7, 1923.

231,453. Bituminous schist, asphalt rock, lignite, and like substances, Retort and Process for the distillation of. Soc. Lyonnaise des Schistes Bitumineaux. March 26, 1924.

232,610. Oxide of zinc, Manufacture of. A. Forgeur and L. Grange. April 16, 1924.

232,629. Ortho-oxyazo-dyestuffs, Manufacture of. Akt.-Ges. für Anilin Fabrikation. April 19, 1924.

236,577. Carbon disulphide furnaces, Method of and means for charging. Chemische Fabrik Griesheim-Elektron. July 3, 1924.

236,918. Absorption apparatus for gases and vapours. Chemische Werke Lothringen Ges. July 10, 1924.

238,175. Purification of hydrogen or other difficultly liquefiable gases. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude. August 5, 1924.

231,800. New cellulose compounds, Manufacture of. L. Lilienfeld. April 4, 1924.

243,394. Alkali polysulphides containing sulphur in a colloidal form, Production of. R. Russell. May 23, 1924.

243,402. Metallurgical furnaces, Structure of. A. Breitenbach. June 25, 1924.

243,405. Alloys. British Aluminium Co., Ltd., A. G. C. Gwyer, and H. W. L. Phillips. July 19, 1924.

243,470. Synthetic resin compositions. A. E. Alexander. (*J. S. Stokes.*) September 9, 1924.

243,510. Esters of unsaturated acids, Manufacture of. O. Y. Imray. (*Soc. of Chemical Industry in Basle.*) November 7, 1924.

243,534. Carbonising fuel, Process and apparatus for. F. Krauss. December 8, 1924.

243,550. Trinitrotoluene, Method of removing tetranitromethane from. R. H. Garther. December 29, 1924.

243,557. Sulphide dyes and intermediate products. W. Carpmael. (*Farbenfabriken vorm. F. Bayer and Co.*) January 12, 1925.

243,607. Acetylene and other gases, Purifying materials for. Chemische Fabrik Griesheim-Elektron, and A. Hermann. April 24, 1925.

243,643. Vegetable oils, Method for removing phosphatides from. H. Bollmann. May 15, 1925.

Applications for Patents

Akt.-Ges. für Anilin-Fabrikation. Manufacture of graphite. 31,428. December 12. (Germany, May 26.)

Aktiebolaget Separator and De Laval Chadburn Co., Ltd. Centrifugal separators. 31,219. December 10.

Barclay, S. F., and Mather and Platt, Ltd. Chemical fire-extinguishers. 31,333. December 11.

Beck, C. W. Manufacture of gaseous and liquid sulphur dioxide, etc. 31,021. December 9.

Burmah Oil Co., Ltd., and Fraser, J. P. Purification of mineral oils, etc. 31,056. December 9.

Cederberg, I. W. Apparatus for catalytic combustion of ammonia and oxygen mixtures. 31,008. December 8. (Germany, December 8, 1924.)

Chemische Fabrik Greisheim-Elektron. Production of phosphoric acid. 31,017. December 8. (Germany, December 30, 1924.)

Clark, A. B., C., R. C., and Clark and Co. Dyeing apparatus. 30,943. December 8.

Cochrane Corporation. Production of base-exchange substances. 31,328. December 11. (United States, December 23, 1924.)

Coley, H. E. Manufacture of zinc. 30,843. December 7.

Faithfull, S. E. Process of making lactic acid and lactates. 31,010. December 8.

Farbenfabriken vorm. F. Bayer and Co. Manufacture of anthraquinone derivatives. 30,998, 30,999. December 8. (Germany, December 9, 1924.)

Farbenfabriken vorm. F. Bayer and Co. Manufacture of alkali hydrosulphites. 31,422. December 12. (Germany, February 13.)

Farbenfabriken vorm. F. Bayer and Co. Manufacture of alkali hydrosulphites. 31,423. December 12. (Germany, February 14.)

Gram, T., Soderlund, O., and Techno-Chemical Laboratories, Ltd. Disposal and recovery of substances from effluent liquids. 31,117. December 9.

Grasselli Chemical Co. and Marks, E. C. R. Process of distilling liquids. 31,009. December 8.

Harvey, P. P. and Holford, H. J. Means for separating water, etc., from oils, etc. 31,112. December 9.

Lautour, F. de. Evaporating and/or concentrating liquids, etc. 31,241. December 10. (New Zealand, January 29.)

Lucas, O. D. and V. L. Oil Processes, Ltd. Processes for cracking, etc., hydrocarbon oils. 30,988. December 8.

Metallurgical Patents Corporation and Withers, J. S. Treatment of metals. 31,433. December 12.

Minerals Separation, Ltd., and Moulden, J. C. Concentration of ores. 31,161. December 10.

Petersen, H. Manufacture of sulphuric acid. 31,321. December 11. (Germany, December 16, 1924.)

Soc. des Etablissements Barbet. Apparatus for treatment of crude benzols. 30,914. December 7. (France, December 5, 1924.)

Walker, H. Manufacture of cellulose. 31,409. December 12.

Whatmough, W. H. Manufacture of compositions containing colouring materials. 30,881. December 7.

Oil Shale Developments in Esthonia

According to the latest annual report of the Esthonian State Oil Shale Mines, for 1924, a net profit of 10,576,740 Esthonian marks was recorded during the year, the profit on the actual working capital being 7·95 per cent. The total output of the Kohtla and Kukruse mines amounted to 240,000 tons of shale, as compared with 208,180 tons in 1923.

The construction of the big new oil distillation works at Kohtla was completed in December last, and work has been commenced with three retorts, each of which produces about 15 tons of oil per day. The whole plant of the factory, which comprises six retorts, will shortly be in operation, when it is anticipated that the output, about 12,000 tons of crude oil per annum, will yield 50 per cent. of the oils required by the Esthonian market. Apart from the oil shale destined for distillation of oil, there is a ready market for the shale in its natural state for heating and industrial purposes. Orders were placed by the railways for 108,330 tons for the present year, while two cement factories required about 63,500 tons and 75,000 tons respectively.

It is anticipated that the demand of the railways for oil shale as fuel will increase in due course, as the furnaces and fire-bars of the locomotives still heated by coal and wood are being adapted for the using of oil shale as fuel. The ultimate aim of the Esthonian State oil shale industry is to supply all the railways and industrial concerns with oil shale as fuel, and to distil oil in sufficient quantities to meet not only the requirements of the home market, but to leave a margin for export.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£20 per ton.
ACID BORIC, COMMERCIAL.—Crystal, £40 per ton, Powder, £42 per ton.
ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
BLEACHING POWDER.—Spot, £10 10s. d/d; Contract, £8 10s. d/d, 4-ton lots.
BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
BORAX, COMMERCIAL.—Crystal, £25 per ton. Powder, £26 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
CALCIUM CHLORATE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d, carr. paid.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 64 O.P.—Industrial, 2s. 5d. to 2s. 11d. per gall. Mineralised, 3s. 8d. to 4s. per gall., in each case according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE.—4½d. per lb.
POTASSIUM CHLORATE.—3⅞d. per lb., ex wharf, London, in cwt. kegs.
SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
SODA CAUSTIC, SOLID.—Spot lots delivered, £15 12s. 6d. to £18 per ton, according to strength; 30s. less for contracts.
SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
SODIUM BICHROMATE.—3½d. per lb.
SODIUM BISULPHITE POWDER 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
SODIUM CHLORATE.—3d. per lb.
SODIUM NITRATE, REFINED 96%.—£13 5s. to £13 10s. per ton, ex Liverpool.
SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—4½d. to 4¾d. per lb. Crude 60's, 1s. 4d. Little demand.
ACID CRESYLIC 97/99.—1s. 7d. to 1s. 9d. per gall. Pale, 95%, 1s. 5d. to 1s. 9d. per gall. Dark, 1s. 4d. to 1s. 6d. per gall. Good demand.
ANTHRACENE PASTE 40%.—3d. per unit per cwt.—Nominal price. No business.
ANTHRACENE OIL, STRAINED.—8d. per gall. Good inquiry. Unstrained, 7d. per gall.
BENZOL.—Crude 65's, 1s. 2d. to 1s. 3d. per gall., ex works in tank wagons. Standard Motor, 1s. 8d. to 1s. 10d. per gall., ex works in tank wagons. Pure, 1s. 11d. to 2s. 3d. per gall., ex works in tank wagons.
TOLUOL.—90%, 1s. 8½d. per gall. More inquiry. Pure, 1s. 11d. to 2s. 2d. per gall.
XYLOL COMMERCIAL.—1s. 10d. to 2s. 3d. per gall. Pure, 2s. 1d. to 3s. 3d. per gall.
CREOSOTE.—Cresylic, 20/24%, 8½d. per gall. Market very quiet. Standard specification, 6¾d. to 7¼d. per gall.; middle oil, heavy, 6¼d. per gall. Market steady.
NAPHTHA.—Crude 9½d. per gall. Solvent 90/160, 1s. 5d. to 1s. 10d. per gall. Fair business. Solvent 90/190, 1s. 1d. to 1s. 6d. per gall. Moderate demand.
NAPHTHALENE CRUDE.—Drained Creosote Salts, £3 to £5 per ton. Whizzed or hot pressed, £5 10s. to £6.
NAPHTHALENE.—Crystals and Flaked, £12 to £13 per ton, according to districts.
PITCH.—Medium soft, 45s. to 55s. per ton, according to district. Market active.
PYRIDINE.—90/160, 17s. 6d. to 20s. per gall. Firmer. Heavy, 10s. 6d. to 11s. per gall. More inquiry.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated.

ACETIC ANHYDRIDE 95%.—1s. 7d. per lb.
ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—7s. per lb. 100%.
ACID BENZOIC.—1s. 9d. per lb.
ACID GAMMA.—9s. per lb.
ACID H.—3s. 6d. per lb. 100% basis d/d.
ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.
ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
ALUMINIUM CHLORIDE, ANHYDROUS.—10d. per lb. d/d.
ANILINE OIL.—7d. per lb. naked at works.
ANILINE SALTS.—7d. per lb. naked at works.
ANTIMONY PENTACHLORIDE.—1s. per lb. d/d.
BENZALDEHYDE.—2s. 1½d. per lb. Good home inquiry.
BENZIDINE BASE.—3s. 6d. per lb. 100% basis d/d.
BENZYL CHLORIDE 95%.—1s. 1d. per lb.
p-CHLORPHENOL.—4s. 3d. per lb. d/d.
p-CHLORANILINE.—3s. per lb. 100% basis.
o-CRESOL 29/31° C.—3d. per lb. Demand quiet.
m-CRESOL 98/100%.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
p-CRESOL 32/34° C.—2s. 1d. to 2s. 3d. per lb. Demand moderate.
DICHLORANILINE.—2s. 3d. per lb.
DICHLORANILINE S. ACID.—2s. 3d. per lb. 100% basis.
DIETHYLANILINE.—4s. 3d. per lb. d/d., packages extra, returnable.
DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.
DINITROBENZENE.—9d. per lb. naked at works.
DINITROCHLORBENZENE.—£84 10s. per ton d/d.
DINITROTOLUENE.—48/50° C. 8d. to 9d. per lb. naked at works. 66/68° C. 10d. per lb. naked at works.
DIPHENYLANILINE.—2s. 10d. per lb. d/d.
G. SALT.—2s. 2d. per lb. 100% basis d/d.
a-NAPHTHOL.—2s. per lb. d/d. Fair home inquiry.
B-NAPHTHOL.—11d. to 1s. per lb. d/d. Fair home inquiry.
a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d. Fair home inquiry.
B-NAPHTHYLAMINE.—3s. 9d. per lb. d/d. Fair home inquiry.
o-NITRANILINE.—5s. 9d. per lb.
m-NITRANILINE.—3s. 6d. per lb. d/d.
p-NITRANILINE.—1s. 10d. per lb. d/d. Fair home inquiry.
NITROBENZENE.—5½d. per lb. naked at works. Good home inquiry.
o-NITROCHLORBENZOL.—2s. 3d. per lb. 100% basis d/d.
NITRONAPHTHALENE.—10d. per lb. d/d.
p-NITROPHENOL.—1s. 9d. per lb. 100% basis d/d.
p-NITRO-*o*-AMIDO-PHENOL.—4s. 6d. per lb. 100% basis.
m-PHENYLENE DIAMINE.—4s. per lb. d/d.
p-PHENYLENE DIAMINE.—9s. 9d. per lb. 100% basis d/d.
R. SALT.—2s. 4d. per lb. 100% basis d/d.
SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.
o-TOLUIDINE.—9d. per lb. Good home inquiry.
p-TOLUIDINE.—2s. 3d. per lb. naked at works.
m-TOLUYLENE DIAMINE.—4s. per lb. d/d.
m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £8. Quiet market. Grey, £14 10s. per ton. Liquor, 9d. per gall. 32° Tw.
ACETONE.—£73 per ton.
CHARCOAL.—£7 to £9 per ton, according to grade and locality. Demand fair.
IRON LIQUOR.—1s. 7d. per gall. 32° Tw. 1s. 2d. per gall., 24° Tw.
RED LIQUOR.—10d. to 1s. per gall. 15° Tw.
WOOD CREOSOTE.—2s. 7d. per gall. Unrefined.
WOOD NAPHTHA, MISCIBLE.—5s. per gall. 60% O.P. Solvent, 4s. 6d. per gall. 40% O.P. Very quiet.
WOOD TAR.—£3 15s. to £5 per ton, according to grade.
BROWN SUGAR OF LEAD.—£40 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 7¼d. to 1s. 5d. per lb., according to quality, Crimson, 1s. 5d. to 1s. 7½d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—2s. per lb.
BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
CADMIUM SULPHIDE.—4s. 4d. per lb.
CARBON BISULPHIDE.—£25 to £28 per ton, according to quantity.
CARBON BLACK.—5½d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£55 to £60 per ton, according to quantity, drums extra.
CHROMIUM OXIDE, GREEN.—1s. 3d. per lb.
DIPHENYLGUANIDINE.—4s. to 4s. 3d. per lb.
INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6¾d. per lb.
LAMP BLACK.—£43 per ton, barrels free.
LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.
MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton f.o.r. London.
SULPHUR.—£9 to £11 per ton, according to quality.
SULPHUR CHLORIDE.—4d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£50 to £55 per ton.
THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb.
THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
VERMILION, PALE OR DEEP.—5s. per lb.
ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, 80% B.P.—£39 per ton ex wharf London in glass containers.
ACID, ACETYL SALICYLIC.—2s. 5d. to 2s. 7d. per lb. Keen competition continuing. Good demand.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.
ACID, BORIC B.P.—Crystal, £46 per ton; Powder, £50 per ton. Carriage paid any station in Great Britain.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 4d. per lb., less 5%. Unsettled.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—5s. 3d. per lb. Resublimed, 7s. 6d.
ACID, SALICYLIC.—1s. 2½d. to 1s. 5d. per lb. Technical.—10½d. to 11d. per lb.
ACID, TANNIC B.P.—2s. 10d. per lb.
ACID, TARTARIC.—1s. 0½d. per lb., less 5%. Market firm.
AMIDOL.—6s. 6d. per lb., d/d.
ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.
AMIDOPYRIN.—12s. 6d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks.
ATROPINE SULPHATE.—11s. per oz. for English make.
BARBITONE.—10s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—15s. 6d. to 17s. 6d. per lb.
BISMUTH CITRATE.—12s. 9d. to 14s. 9d. per lb.
BISMUTH SALICYLATE.—12s. 6d. to 14s. 6d. per lb.
BISMUTH SUBNITRATE.—13s. to 15s. per lb. according to quantity.
BORAX B.P.—Crystal, £29; Powder, £30 per ton. Carriage paid any station in Great Britain.
BROMIDES.—Potassium, 1s. 9d. to 1s. 11d. per lb.; sodium, 2s. to 2s. 2d. per lb.; ammonium, 2s. 3d. to 2s. 5d. per lb., all spot.
CALCIUM LACTATE.—1s. 4d. to 1s. 5d. Market firmer.
CHLORAL HYDRATE.—3s. 5d. to 3s. 6d. per lb., duty paid.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
FORMALDEHYDE.—£41 per ton, in barrels ex wharf.
GLYCEROPHOSPHATES.—Fair business passing. Calcium, soluble and citrate free, 7s. per lb.; iron, 8s. 9d. per lb.; magnesium, 9s. per lb.; potassium, 50%, 3s. 6d. per lb.; sodium, 60%, 2s. 6d. per lb.
GUAIACOL CARBONATE.—7s. per lb. Advanced.
HEXAMINE.—2s. 4d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 8d. per gallon f.o.r. makers' works, naked.
HYDROQUINONE.—4s. 4¾d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE B.P.—2s. to 2s. 3d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb.
MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.
MAGNESIUM OXIDE.—Light Commercial, £70 per ton, less 2½%, price reduced; Heavy Commercial, reduced to £23 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.
MENTHOL.—A.B.R. recrystallised B.P., 36s. net per lb., December delivery. Synthetic, 22s. 6d. to 27s. 6d. per lb., according to quality. English make. Very heavy demand.
MERCURIALS.—Red oxide, 5s. 2d. to 5s. 4d. per lb.; Corrosive sublimate, 3s. 9d. to 3s. 11d. per lb.; white precipitate, 4s. 6d. to 4s. 8d. per lb.; Calomel, 4s. to 4s. 2d. per lb. Market flat.
METHYL SALICYLATE.—1s. 6½d. to 1s. 7½d. per lb.
METHYL SULPHONAL.—16s. 9d. per lb.
METOL.—9s. per lb. British make.
PARAFORMALDEHYDE.—1s. 11d. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—4s. to 4s. 3d. per lb.
PHENAZONE.—6s. to 6s. 3d. per lb. Spot lower than forward price.
PHENOLPHTHALEIN.—4s. to 4s. 3d. per lb. Supply exceeds demand.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—80s. per cwt., less 2½% for ton lots. Market very firm.
POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb. in cwt. lots. Quiet.
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity. Steady market.
POTASSIUM METABISULPHITE.—7½d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 7½d. per lb., spot. slightly easier.
QUININE SULPHATE.—2s. 3d. to 2s. 4d. per oz., in 100 oz. tins. Steady market.
RESORCIN.—3s. 9d. per lb. In fair quantities.
SACCHARIN.—51s. 5d. to 53s. 8d. per lb., according to quantity. Limited inquiry.
SALOL.—3s. per lb.
SILVER PROTEINATE.—12s. per lb. for satisfactory product light in colour.
SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923. 1s. 11d. to 2s. 2d. per lb., according to quantity. Advanced.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£14 to £15 per ton, according to quantity, d/d consignee's station in 1-cwt. kegs.
SODIUM METABISULPHITE CRYSTALS.—37s. 6d. to 60s. per cwt., net cash, according to quantity.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. to 80s. per cwt., according to quantity.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. per lb. Crystal, 1s. 11d. to 2s. 1d. per lb. Very heavy demand.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
SULPHONAL.—12s. per lb. Limited demand.
THYMOL.—12s. to 15s. per lb. Strong demand.

Perfumery Chemicals

ACETOPHENONE.—9s. per lb.
AUBEPINE (EX ANETHOL).—10s. 3d. per lb.
AMYL ACETATE.—3s. per lb.
AMYL BUTYRATE.—6s. 6d. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—6s. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 4d. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 4d. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.
BENZYL BENZOATE.—2s. 9d. per lb.
CINNAMIC ALDEHYDE NATURAL.—16s. 9d. per lb.
COUMARIN.—11s. 9d. per lb.
CITRONELLOL.—16s. per lb.
CITRAL.—9s. 6d. per lb.
ETHYL CINNAMATE.—9s. per lb.
ETHYL PHTHALATE.—3s. per lb.
EUGENOL.—10s. per lb.
GERANIOL (PALMAROSA).—22s. 6d. per lb.
GERANIOL.—8s. to 16s. per lb.
HELIOTROPINE.—6s. 3d. per lb.
ISO EUGENOL.—14s. 6d. per lb.
LINALOL EX BOIS DE ROSE.—18s. per lb.
LINALYL ACETATE.—18s. per lb.
METHYL ANTHRANILATE.—9s. 3d. per lb.
METHYL BENZOATE.—5s. per lb.
MUSK KETONE.—40s. 6d. per lb.
MUSK XYLOL.—5s. 9d. per lb.
NEROLIN.—4s. per lb.
PHENYL ETHYL ACETATE.—14s. per lb.
PHENYL ETHYL ALCOHOL.—11s. 6d. per lb.
RHODINOL.—36s. 6d. per lb.
SAFROL.—1s. 4d. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN.—21s. 6d. to 23s. 6d. per lb. Good demand.

Essential Oils

ALMOND OIL.—12s. 6d. per lb.
ANISE OIL.—3s. 9d. per lb.
BERGAMOT OIL.—26s. 6d. per lb.
BOURBON GERANIUM OIL.—13s. 3d. per lb.
CAMPHOR OIL.—60s. per cwt.
CANANGA OIL, JAVA.—11s. 3d. per lb.
CINNAMON OIL, LEAF.—5d. per oz.
CASSIA OIL, 80/85%.—11s. per lb.
CITRONELLA OIL.—Java, 85/90%, 3s. 7d. Ceylon, 2s. 4d. per lb.
CLOVE OIL.—7s. 3d. per lb.
EUCALYPTUS OIL, 70/75%.—1s. 10d. per lb.
LAVENDER OIL.—French 38/40%, Esters, 25s. 6d. per lb.
LEMON OIL.—7s. per lb.
LEMONGRASS OIL.—4s. 9d. per lb.
ORANGE OIL, SWEET.—11s. 3d. per lb.
OTTO OF ROSE OIL.—Bulgarian, 60s. per oz. Anatolian, 35s. per oz.
PALMA ROSA OIL.—13s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 125s. per lb. Japanese, 25s. 6d. per lb.
PETITGRAIN OIL.—9d. per lb.
SANDAL WOOD OIL.—Mysore, 26s. per lb. Australian, 18s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, December 18, 1925.

THE chemical market still continues fairly active and the outlook is good. Prices, on the whole, continue exceptionally steady and there are few changes.

Export trade does not improve very much and what business is passing is done on very close margins.

General Chemicals

ACETONE continues active and the price is firm at £80 per ton, ex wharf.

ACID ACETIC continues in fair request and price is firm at £37 to £39 for technical 80% and £39 to £41 per ton for pure.

ACID FORMIC is extremely firm. Stocks are short and to-day's quotation is from £50 to £51 per ton.

ACID LACTIC is still quiet, but fairly firm at £43 to £44 per ton for 50% by weight.

ACID OXALIC.—Demand is only moderate but the material is firm at 3¾d. per lb.

ACID TARTARIC.—The market is quiet and price is nominally unchanged at 11½d. per lb. The recent convention formed does not appear to have made any appreciable difference in this market.

ALUMINA SULPHATE is active and is quoted at £5 5s. to £5 10s. per ton for 17-18%.

AMMONIUM CHLORIDE is somewhat weak and the demand poor. The price quoted is £18 10s. to £19 per ton.

ARSENIC is unchanged and the market is purely nominal.

BARIUM CHLORIDE is extremely firm and to-day is quoted at £9 10s. to £10 per ton.

BELACHING POWDER is unchanged.

CREAM OF TARTAR is becoming very scarce and is quoted at £75 to £76 per ton.

EPSOM SALTS.—This product is very firm and supplies are obtainable at £5 15s. per ton.

FORMALDEHYDE is also scarce and many suppliers easily secure from £44 to £44 1s. per ton.

LEAD ACETATE continues firm at £44 to £44 5s. per ton for white, while there has been an appreciable improvement in the demand for brown, which is quoted from £43 to £44 per ton.

METHYL ACETONE is improving and makers are not anxious to sell at the present quotation of £48 per ton.

LIME ACETATE continues firm and is quoted at £18 per ton.

LITHOPONE is in fair request and is unchanged in value at about £19 to £20 per ton.

POTASSIUM CARBONATE is unchanged at £23 per ton.

POTASSIUM CHLORATE is in better demand and is quoted at 4d. per lb., ex store.

POTASSIUM PERMANGANATE.—Quite a fair business has been transacted and spot material is offering at 7½d. per lb.

SODIUM ACETATE is firmer and is quoted at £18 10s. per ton.

SODIUM BICHROMATE is unchanged and material is obtainable at 3½d. per lb.

SODIUM NITRITE.—There is only a small demand with price unchanged at £22 10s. per ton.

SODIUM PRUSSIATE is very firm at 4½d. per lb.

SODIUM SULPHIDE is weak and likely to decline in value.

ZINC SULPHATE is unchanged at about £14 per ton.

Coal Tar Products

The market generally for Coal Tar Products remains firm, with little change from last week.

90% BENZOL is firm at 1s. 10d. per gallon on rails.

PURE BENZOL is unchanged, at 2s. 1d. to 2s. 2d. per gallon on rails.

CREOSOTE OIL is steady, at 6⅜d. per gallon on rails in the North, while the price in London is 7½d. per gallon.

CRESYLIC ACID.—The pale quality, 97-99%, is unchanged at 1s. 10d. to 1s. 11d. per gallon on rails, while the dark quality, 95-97%, is worth 1s. 5d. to 1s. 6d. per gallon on rails.

SOLVENT NAPHTHA is quoted at 1s. 5d. per gallon on rails.

HEAVY NAPHTHA is worth 1s. 1d. per gallon on rails.

NAPHTHALENES are unchanged, the lower grades being worth from £4 to £4 10s. per ton, the 76-78 quality about £6 per ton, and the 74-76 quality about £5 10s. per ton.

PITCH remains firm with good demand. Prices are maintained at 52s. 6d. to 55s. per ton, f.o.b. U.K. ports.

Nitrogen Products Market

Export.—During the last week the demand for sulphate of ammonia has been quiet, the buyers in some countries holding off in the expectation of lower prices. It seems certain that as the demand for consumption will be heavy for the new year and right up to April, there is little foundation for this opinion. Producers are holding firm at £12 5s. per ton, f.o.b. U.K. ports in single bags, with higher prices for forward position. At the moment only small sales are being made but a certain liveliness is expected early in the new year.

Home.—On the announcement of the home prices published in our last issue there have been considerable forward bookings. It appears that the home season 1925-26 will be a large one. British producers are reserving quantities at points where the demand is likely to be heaviest. The prompt sales are small, but in view of higher prices for January a considerable demand is expected to set in towards the end of the month.

Nitrate of Soda.—The nitrate position remains unchanged; the demand from consumers is very small. Cargoes c.i.f. chief European ports have changed hands for prompt arrival at about £11 5s. per ton. Higher quotations are being made for later shipment.

Latest Oil Prices

LONDON.—LINSEED OIL weak and 20s. to 25s. lower. Spot, £35 15s.; December, £34 7s. 6d.; January-April, £34 12s. 6d.; May-August, £34 2s. 6d. RAPE OIL quiet. Crude crushed, spot, £48 10s.; technical refined, £51 10s. COTTON OIL quiet. Refined common edible, £44; Egyptian crude, £37 10s.; deodorised, £46. TURPENTINE was weak at a loss of 3s. per cwt. American, spot, 64s. 6d.; and January-April, 65s., sellers, after 64s. 9d. taken.

HULL.—LINSEED OIL.—Naked, spot, and December, £35 15s.; January-April, £35 5s.; May-August, £34 10s. COTTON OIL.—Naked, Bombay crude, £34 15s.; Egyptian, crude, £36; edible refined, £39 10s.; technical, £38 10s. PALM KERNEL OIL.—Crushed, naked, 5½ per cent., £43 10s. GROUND NUT OIL.—Crushed/extracted, £44; deodorised, £48. SOYA OIL.—Extracted and crushed, £41 5s.; deodorised, £44 15s. RAPE OIL.—Extracted, £47 10s. per ton net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

American Market Movements

(From *Drug and Chemical Markets.*)

A STEADY tone prevails in the fine chemical market with prices for most of the standard items well maintained. Menthol continues its downward course with quicksilver remaining strong.

Refined sulphur prices advanced. New tin salt prices. Formic acid higher for 90 per cent. Market for industrial chemicals is generally strong; but prices show little variation.

Intermediate manufacturers name unchanged prices on all products. Competition sharp on contract business in some instances. Benzene remains the only light oil obtainable. Phenol, naphthalene, pyridine, and cresylic acid unchanged.

Contract for Brunner, Mond and Co.

FOR the supply of silicate of soda for road work, the Works and Depot Committee reported at the last meeting of the Southwark Borough Council that they had obtained a quotation from Brunner, Mond and Co., Ltd., alkali manufacturers. The existing contract expired on December 31, but Brunner, Mond and Co. offered a reduction of 5s. per ton on present prices, as from November 1, if the contract was extended to December 31, 1926. The Committee recommended, and it was approved, that the offer of Brunner, Mond and Co., Ltd., to supply silicate of soda in 1 cwt. drums of 2 ton lots, as required by the Council, as and from November 1, 1925, until December 31, 1926, at £7 10s. per ton, be accepted.

Artificial Silk Developments

SEVERAL artificial silk developments are announced. Mr. H. R. S. Clotworthy is to be chief research chemist to the Western Viscose Silk Mills. Mr. E. J. Boake, who, as announced last week, will be chairman of the Apex (British) Artificial Silk, Ltd., will be supported by Mr. P. M. Quas-Cohen, chairman and managing director of Cohen and Wilks, Ltd., textile and clothing manufacturers. Mr. A. E. Berry, chairman and managing director of Manbré, Sugar and Malt, Ltd. Mr. F. W. Lewis, director of Boake, Roberts and Co., Ltd., and Mr. J. W. Bearder, director of Cohen and Wilks, Ltd. The technical committee is Dr. L. A. Levy, F.I.C., and Messrs. F. W. Lewis and J. W. Bearder. The consulting chemists are Dr. O. Silberrad and Dr. J. N. Goldsmith. A site at Edmonton, London, N. is being secured for Eley Brothers, Ltd.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, December 18, 1925.

THE heavy chemical market has been rather quiet during the past week, due, no doubt, to the approach of the general stocktaking period.

There have been one or two inquiries for arsenic, which consequently has been quoted a little higher, but business could, no doubt, be placed at prices quoted a week ago. Prices of other chemicals are on about the same level as last reported.

Industrial Chemicals

ACID ACETIC 98/100%.—In usual steady demand. Quoted £55 to £67 per ton according to quality and packing, c.i.f. U.K. port. 80% pure, £40 to £41 per ton. 80% technical, £38 to £39 per ton, packed in casks, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated, or small flaked £40 per ton; powdered, £42 per ton packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Still in poor demand and quoted price lower, at about 4⅛d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at about 1s. 3⅜d. per lb., less 5%, ex wharf, in moderate demand.

ACID FORMIC, 85%.—Quoted £48 per ton, ex wharf, early delivery.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC 80°.—Remains unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—Spot material quoted 3¾d. per lb., ex wharf. Could be obtained slightly cheaper for prompt shipment from the continent.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Demand rather poor and price now quoted 11⅜d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18% IRON FREE.—On offer from the Continent at about £5 10s. per ton c.i.f. U.K. ports. Spot material available at £6 5s. per ton, ex store.

ALUM, LUMP POTASH.—Quoted £7 15s. per ton c.i.f. U.K. ports. Spot material available at about £9 2s. 6d. per ton, ex store. Powdered quality on offer from the continent at £7 7s. 6d. per ton, c.i.f. U.K. ports.

AMMONIA ANHYDROUS.—In moderate demand and price unchanged at 1s. 4½d. per lb., less 5%, ex station. Containers extra and returnable.

AMMONIA CARBONATE.—Lump £37 per ton. Powdered £39 per ton, packed in 5 cwt. casks, delivered U.K. ports.

AMMONIA LIQUID, 880.—In usual steady demand and price unchanged at 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £26 per ton to £27 per ton, ex station. On offer from the continent at about £22 10s. per ton c.i.f. U.K. ports. Fine white crystals quoted £18 15s. per ton, c.i.f. U.K. ports, prompt shipment from the continent.

ARSENIC, REFINED WHITE CORNISH.—Quoted £17 15s. per ton, ex wharf, prompt shipment from works. Spot material available at about £19 per ton, ex store.

BARIUM CHLORIDE.—Large white crystals quoted £9 per ton, ex store. Spot delivery. On offer from the continent at about £7 15s. per ton, c.i.f. U.K. ports. Fine white crystals £7 5s. per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station. Contracts 20s. per ton less. On offer from the continent at about £7 15s. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £24 10s. per ton; crystals, £25 per ton; powdered £26 per ton. Carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, carriage paid U.K. stations. Continental quoted £3 10s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN. In good demand for export. Price unchanged at about £3 7s. 6d. per ton, f.o.b. U.K. ports, packed in casks.

COPPER SULPHATE.—English material for export quoted £24 per ton, f.o.b. U.K. port. Continental on offer at about £22 per ton, ex wharf.

FORMALDEHYDE 40%.—Easier at about £38 per ton, c.i.f. U.K. ports. Spot material quoted £40 per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental on offer at about £3 per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material cheaper at about £43 per ton, ex store.

LEAD, WHITE.—Offer from the continent at about £42 10s. per ton, ex wharf. Spot material available at about £43 10s. per ton, ex store.

LEAD ACETATE.—Cheaper quotations from the continent now on offer at about £42 15s. c.i.f., U.K. ports. Spot material quoted £45 per ton, ex store.

MAGNESITE, GROUND CALCINED.—In moderate demand and price unchanged at about £8 15s. per ton, ex station.

POTASH CAUSTIC 88/92%.—Syndicate prices vary from £25 10s. to £28 15s. per ton c.i.f. U.K. ports, according to quantity and destination. Spot material available at about £29 per ton, ex store.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 10s. per ton, c.i.f. U.K. ports. Prompt shipment from the continent. Spot material available about £27 per ton, ex store.

POTASSIUM CHLORATE, 98/100%.—Limited quantities available for prompt shipment from the continent at about £30 per ton, c.i.f. U.K. ports.

POTASSIUM NITRATE, SALTPETRE.—Quoted £24 5s. per ton, c.i.f. U.K. ports, prompt shipment. Spot material available at about £26 15s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Spot material quoted 8d. per lb., ex store. Offered for early delivery at 7½d. per lb., ex wharf.

POTASSIUM PRUSSIATE, YELLOW.—In good demand and price unchanged at about 7¾d. per lb., ex store. Offered for prompt shipment from the continent at about 7½d. per lb., ex wharf.

SODA CAUSTIC.—76/77%, £17 10s. per ton; 70/72%, £16 2s. 6d. per ton; broken 60%, £16 12s. 6d. per ton; powdered 98/99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—On offer at about £18 5s. per ton, ex store, spot delivery. Quoted £17 15s. per ton, c.i.f. U.K. ports, prompt shipment.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb., delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more; alkali 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station. Minimum 4-ton lots. Pea crystals, £14 per ton, ex station. Continental commercial quality offered at £9 per ton, ex store.

SODIUM NITRATE.—Quoted £13 per ton, ex store; 95/98% refined quality, 7s. 6d. per ton extra.

SODIUM NITRITE 100%.—Quoted £24 per ton, ex store. Offered from the continent at about £22 5s. per ton, c.i.f. U.K. ports.

SODIUM PRUSSIATE, YELLOW.—In good demand and price advanced to about 4⅜d. per lb. On offer from the continent at about 4¼d. per lb., ex wharf.

SODIUM SULPHATE, SALTCAKE.—Price for home consumption, £3 10s. per ton, f.o.r. works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE.—60/65% solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, 31/34%, £8 12s. 6d. per ton. All delivered buyers' works U.K., minimum 5-ton lots with slight reduction for contracts; 60/62% solid quality offered from the continent at about £10 10s. per ton, c.i.f. U.K. ports; broken, £1 per ton more; crystals, 30/32%, £7 10s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £10 10s.; roll, £9 10s.; rock, £9 7s. 6d.; ground, £9 5s. per ton, ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 96/98%, quoted about £24 per ton, f.o.b. U.K. ports; 98/100% solid, on offer from the continent at about £22 10s. per ton, c.i.f. U.K. ports. Powdered about 20s. per ton extra.

ZINC SULPHATE.—Continental manufacture on offer at about £11 15s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

H. ACID.—3s. 6d. per lb. Fair home inquiries.

BENZIDINE BASE.—3s. 6d. per lb. Some home inquiries.

ALPHA NAPHTHOL.—2s. per lb.—Small home inquiries.

BETA NAPHTHOL.—11d. to 1s. per lb. Some home inquiries.

DIMETHYLANILINE.—2s. per lb. Small home inquiries.

Alleged False Description of Sulphur

AT the Croydon County Bench on Wednesday, Robinson Brothers, Ltd., of Birmingham and West Bromwich, appeared in answer to a summons by Mr. Hedley Miller, of the London Chamber of Commerce, for selling certain goods to which a false trade description, namely " flowers of sulphur," was applied.

Mr. Roome, for the plaintiffs, said that hopgrowers used flowers of sulphur, which, dusted on to the plant, killed the spores of the " mould." Sulphur was produced in two commercial forms. Flowers of sulphur was the product of a sublimation process, and consisted of fine globular particles of an amorphous character; ground sulphur was raw sulphur ground, resulting in particles of an angular and crystalline character. The prices at the time of the sale were approximately £16 and £10 per ton respectively.

The London Chamber of Commerce examined, on behalf of traders, samples of goods with a view to ensuring straightforward trading. Mr. Hedley Miller's attention was drawn to an advertisement of the defendants in an agricultural paper, and an article urged hopgrowers to obtain flowers of sulphur of a recognised brand, such as that advertised by Robinson Brothers, and stating that powdered (ground) sulphur was of little or no use. Mr. Hedley Miller ordered from the defendants 2 cwt. " Fortress Brand Flowers of Sulphur," which was invoiced to him as " Flowers of Sulphur " and delivered. He submitted a sample from the cask to Teschemacher and Smith, analysts, who certified that the article was not flowers of sulphur but ground sulphur. The price paid was that of flowers of sulphur. A sample was also sent to Robinson Brothers in case they might wish to have it analysed. On failing to receive an explanation Mr. Hedley Miller drew the attention of the defendants to the Act. Robinson Brothers asked for the goods to be returned, but made no reference to the Act, and the prosecution was instituted.

Mr. W. Russell Smith (Teschemacher and Smith), analytical chemist, proved the analysis of the sample, and Mr. H. T. B. Jones (Brandram Brothers & Co., Ltd.) explained the process of manufacture of flowers of sulphur and ground sulphur, and said that there was a growing practice of quoting for flowers of sulphur and delivering ground sulphur at a price which was lower than that of flowers of sulphur, the effect being to cut out of the market a manufacturer or merchant who would not misdescribe goods.

Mr. Willes submitted that no case had been made out for committal. The Court committed the defendants, who were bound over to appear at Quarter Sessions (Kingston) on January 5.

Cellulose Holdings Dispute

THE steps taken by the Board of the Cellulose Holdings and Investment Co. following the dispute with the British Celanese Co. were approved by the shareholders at the extraordinary general meeting held in London on Thursday, December 10, when Mr. A. Loewenstein presided. The meeting approved the changing of the company's name to the Celanese Holdings and Investment Co., despite opposition. A proposal to increase the number of directors from seven to ten caused much criticism. It was explained that one of the reasons why more directors were desired was that the directors wanted to appoint three to the board of the British Celanese Co. The company, said the chairman, needed the best advice it could get, and Mr. Arthur Kemp, president of the National Federation of Hosiery Manufacturers' Association, had consented to join the board. Finally, the meeting was adjourned until the chairman had delivered his speech at a second meeting to which British Celanese shareholders had been invited. The resolution was, however, eventually carried. The chairman said they proposed to call a meeting for the election of a new board and the appointment of a new management, and to set up a committee of inquiry. They wanted that committee to investigate and report upon the whole administration and responsibilities of the British Celanese Co. They wanted the committee to look into all the charges made against the Tubize. They proposed that the committee should also suggest a plan of financial reorganisation of the British Celanese Co.

The breach between the Holding Co. and the Celanese administration came at this time because of certain events, the culmination of which was the summary dismissal of the Holding Co.'s director. Nearly four years ago they saved British Celanese from disaster. To-day they had a first charge on all its assets. They had no brief for the Tubize Co. or for any outside interest. They had but one aim: to make the British Celanese the success it ought to be.

A resolution was moved approving the steps proposed by the chairman, and eventually this was carried by a large majority.

In spite of the demand made by Dr. Henry Dreyfus, Dr. Camille Dreyfus, and Mr. Clavel, it is reported that Mr. Alfred Loewenstein, chairman of the Cellulose Holdings and Investment Co., has declined to withdraw or to apologise for the statements made by him at the extraordinary general meeting.

Company News

COURTAULDS, LTD.—A dividend on the 5 per cent. cumulative preference shares will be paid on January 1 next.

BOOTS PURE DRUG CO.—A quarterly dividend of 9 per cent., less tax, has been declared on the ordinary shares, payable on January 1.

EASTERN SMELTING CO.—The net profits for the past year amount to £57,928. A dividend of 12½ per cent. on the ordinary shares is proposed, carrying forward £17,453.

SULPHIDE CORPORATION.—The net profits for the year ended June 30 were £56,697. A dividend of 7½ per cent. is proposed on the preference shares, adding £5,600 to the contingencies reserve, and carrying forward £6,097.

UNITED INDIGO AND CHEMICAL CO.—The directors have decided to pay interim dividends at the rate of 5 per cent. per annum on the participating cumulative preference shares, and ordinary shares, for the six months ending December 31, less tax at 4s. in the £.

DE BEERS CONSOLIDATED MINES, LTD.—The board of directors has declared an interim dividend of 20 per cent. on the preference shares, in respect of the financial year ending June 30, 1926. They also announce an interim dividend of 25 per cent. to deferred shareholders.

IDRIS AND CO.—The report for the year ended October 31 last, states that after charging all depreciations the profit is £18,286, as compared with £14,616 for 1924. The directors propose a dividend of 10 per cent. on the " A " and " B " ordinary shares and 5 per cent. on the founders' shares, leaving a balance to carry forward of £3,977.

Chemical Trade Inquiries

The following inquiries, abstracted from the " Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

TAR, ETC.—Tenders are invited for the supply of tar and bituminous preparations, oils, and petrol, for Gloucester County Council, to be received by the City Surveyor by January 1.—For the supply of bitumen and other surfacing compound, road tar, oils, etc., for Ipswich, to County Surveyor by January 2.—For the supply of tar and bituminous compounds, for West Riding County Council. Forms from County Hall, Wakefield.

SAPONIFIED CRESOL.—Tenders are invited for the supply of saponified cresol, for the India Store Department, Branch 14, Belvedere Road, Lambeth, S.E.1, whence forms are obtainable.

TAR, CEMENT, ETC.—Tenders are invited for the supply of Portland cement, creosote oil and pitch, and dehydrated tar, for Middleton, Lancs, Corporation. Forms to Town Clerk by January 8.

FINE AND HEAVY CHEMICALS.—An Auckland agent desires to represent British manufacturers of chemicals used in connection with woollen mills, tanning, baking, confectionery and foodstuffs, photography, and water purification, also alkalies, on a commission basis, for the whole of New Zealand. (Reference No. 717.)—A Paris firm wishes to represent British chemical producers. (Reference No. 722.)

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

NORRIS BROTHERS, LTD., 107/111, Moorgate Station Chambers, Moorgate, E.C., chemical manufacturers. (C.C., 19/12/25.) £13 14s. 8d. November 12.

VERNON OIL AND POLISH CO., 69, West Derby Street, Liverpool, manufacturers. (C.C., 19/12/25.) £20 5s. 4d. July 30.

Receivership

LONDON ROYALTY CO., LTD. (R., 19/12/25.) A. M. Hobbs, of 64, Great Portland Street, W.1, was appointed receiver on December 4, under powers contained in debenture dated August 19, 1925.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

SHARDLOW MALT EXTRACT CO., LTD. (M., 19/12/25.) Registered December 4, £500 mortgage, to G. F. Bourne, The Ox Leasows, near Eccleshall, farmer; charged on The Lawn, Wilne Lane, Shardlow. *Nil. November 9, 1925.

TAYLORS' DRUG CO., LTD., Leeds. (M., 19/12/25.) Registered December 2, £750 mortgage, to Gwendoline Ashworth, c/o Armitage Speight and Ashworth, 5, Greek Street, Leeds; charged on 321, Harehills Lane, Leeds. *£138,567 4s. 6d. November 9, 1925.

Satisfaction

CLAY (ROBERT), LTD. (old company), Cheadle, bleachers. (M.S., 19/12/25.) Satisfaction registered December 3, £30,000, balance of amount registered January 3, 1917.

London Gazette, &c.

Winding Up Petition

RADIUM PREPARATIONS, LTD. (W.U.P., 19/12/25.) A creditor's petition for winding-up has been presented and is to be heard at the Royal Courts of Justice, Strand, London, on January 12.

Companies Winding Up Voluntarily

METAL POWDERS, LTD. (C.W.U.V., 19/12/25.) By special resolution November 18, confirmed December 4. R. W. Liddell appointed liquidator. Meeting of creditors at Nobel House, Buckingham Gate, Westminster, at 12 noon, on Monday, December 21, creditors' claims by January 9.

NATIONAL CARBIDE CO. (1911), LTD. (C.W.U.V., 19/12/25.) By special resolution November 11, confirmed November 30.

New Companies Registered

BIRSTALL DYE AND CHEMICAL CO., LTD. Registered December 14. Industrial, analytical, and research chemists, chemical engineers, manufacturers of synthetic organic products, aniline dye and intermediates, etc. Nominal capital, £1,000 in £1 shares. Solicitors: Scholefield, Taylor and Maggs, Batley.

R. CRITCHLEY, LTD., 26, Dyer Street, Hulme, Manchester. Registered December 14. Oil merchant and refiner and tallow manufacturer. Nominal capital, £10,000 in £1 shares.

MIRVALE CHEMICAL CO., LTD. Manufacturers of and dealers in chemical products; manufacturing chemists, etc. Nominal capital, £25,000 in £1 shares (10,000 8 per cent. cumulative preference and 15,000 ordinary). Solicitor: W. H. Clough, 1, Northgate, Cleckheaton.

SCIENTIFIC PRODUCTS, LTD., 88–90, Chancery Lane, London, W.C. Scientific instrument manufacturers. Nominal capital, £500 in 5s. shares.

Tariff Changes

TERRITORY OF NEW GUINEA.—Revisions in Customs tariff include benzine, benzoline, crude petroleum, gasoline, naphtha, petrol and other liquid fuels and lubricating oils, now 3d. per gallon.

ANGOLA.—The basic import duty on petrol is reduced to 10 per cent. *ad valorem*, and the import surtaxes are removed.

HUNGARY.—Decree effective as from November 20 includes the following as duty-free goods:—Nitric acid and trinitrotoluol for the manufacture of explosives under control; salts of antimony and artificial cryolite; vaseline oil, for the manufacture under control of medicinal specialities; lye-washed sulphite for foundries (under control); and salts of succinic acid and phthalic acid.

Fighting Oil Fires

THE question of fighting oil fires is one of importance in the chemical industry, and the appliances of Foamite Fire Foam, Ltd., 24–26, Maddox Street, London, W.1, have the recommendation that they have already been adopted by various chemical concerns. In a typical land installation there are two solution storage tanks, one (lead-lined) holding the acid, the other the alkali solution, these tanks being connected by suction pipes, at their lower ends, to a twin duplex pump. The Foamite pump is suitably housed, and with it are fitted the air compressor for stirring the solutions, and a heater for maintaining the solutions at an efficient temperature in cold weather. The discharge orifices of the pump are connected to outgoing field pipes leading to the mixing-chambers on the oil tanks and to Foamite hydrants at suitable points. Control valves are fitted at safe distances from the tanks, the pipes carrying the two solutions are led separately to the mixing-chambers at the tops of the oil-tanks with the object of the foam being formed as near as possible to the seat of the fire. All pipes are empty until the system is operated. Special foam discharge devices are provided according to the nature of the risk. This apparatus and various other types of fire fighting appliances are illustrated in a new book available to readers.

Chemical Research at St. Andrews

SIR WILLIAM BRAGG recently opened the new physics and chemistry laboratories in the United College, St. Andrews University. The chemistry accommodation forms an extensive part of the Institute for Chemistry Research. It contains accommodation for 20 research workers, in addition to rooms for special purposes. For the past 20 years the research institute has become widely known as a centre of research work on sugars and carbohydrates, problems of optical activity, and general synthetic organic chemistry. The Carnegie Trust has been generous in providing funds and the Department of Scientific and Industrial Research has made a grant for special apparatus for physical investigation.

Sir William, who received the honorary degree of LL.D., said it was only in recent times that we had really grasped the meaning of the atomicity of electricity. The realisation of the atomic theory of matter led on the one hand to the still more minute quantities with which radioactivity concerned itself, and, on the other, to the conception of molecules, the small companies of atoms more or less permanent in character, which were the subject of the chemist's work.

Plant for Seger Cone Production

AN inquirer wishes to be put in touch with suppliers of plant for the manufacture of "Seger" cones. The name and address may be had on application to THE CHEMICAL AGE.